

# The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The Mining Journal is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2267.—Vol. XLIX.

LONDON, SATURDAY, FEBRUARY 1. 1879.

[WITH SUPPLEMENT.] {PRICE SIXPENCE. PER ANNUM, BY POST, £1 6s.

**MR. JAMES H. CROFTS, STOCK AND SHARE BROKER  
AND MINING SHARE DEALER.**  
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.  
ESTABLISHED 1842.

BUSINESS transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Bonds (Foreign and Colonial), Railways, Insurance, Assurance, Telegraph, Tramway, Shipping, Canal, Gas, Water, and Dock Shares, and all Miscellaneous Shares.  
Business negotiated in Stocks and Shares not having a general market value.

ACCOUNTS OPENED FOR THE MONTHLY SETTLEMENT  
A Daily Price List, issued at 5 P.M., giving latest Quotations up to close of Market, and every Friday a general List containing closing prices of the week.  
MINES INSPECTED.

BANKERS: CITY BANK, LONDON; SOUTH DOWNS BANK, ST. AUGUSTINE.

**SPECIAL DEALINGS** in the following, or parts:—  
20 Bettws-y-Coed, 50 Hultafall (off. wtd.) 100 Parys Mount, 6s.  
20 Chapel House, £2½ 80 Javali, 4s. 6d. 45 Richmond, £9 13s. 9d.  
100 Chontales, 12s. 35 Leadhills, £2. (ex div.)  
40 Colorado, 31s. 50 Llanywdd, 40 Roman Grav., £6 13 9  
20 East Van, £1½ 100 Morfa Du, 16s. 100 Rockhope, 6s.  
20 Eberhardt, £2½ 10 Pateley Bridge, £1½ 50 Tankerville, £2½  
55 Flagstaff, 4s. 9d. 100 Penstruthal, 3s. 10 West Chiverton, £2½  
25 Herofoot, 150 Pectarena, 4s. 6d. (call paid).

\*. SHARES SOLD FOR FORWARD DELIVERY (ONE, TWO, OR THREE MONTHS) ON DEPOSIT OF TWENTY PER CENT.

RAILWAYS—SPECIAL BUSINESS.

FOREIGN BONDS—SPECIAL BUSINESS.

Fortnightly accounts opened on receipt of the usual cover.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.  
ESTABLISHED 1842.

**MR. W. H. BUMPUS, STOCK AND SHARE BROKER,  
AND MINING SHARE DEALER.**  
44, THREADNEEDLE STREET, LONDON, E.C.  
ESTABLISHED 1867.

BUSINESS transacted in STOCK EXCHANGE SECURITIES and MISCELLANEOUS SHARES of every description.  
RAILWAYS, BANKS, FOREIGN and COLONIAL BONDS, TRAMWAYS, TELEGRAPHS, and all the LEADING INVESTMENTS.  
Accounts opened for the Fortnightly Settlement.  
A Stock and Share List free on application.

**MR. BUMPUS has SPECIAL BUSINESS** in the undermentioned:—  
50 Almada, 3s. 9d. 10 East Van, 3s. 6d. 100 Parys Mount, 6s.  
30 Blue Tent, 3s. 6d. 15 Eberhardt, £3 10s. 3d 70 Penstruthal, 3s. 9d.  
40 Birdseye Creek, 13s. 6 20 Fronting, £2 8s. 9d. 40 Port Phillip, 10s. 6d.  
5 Cape Copper, £20½ 75 Gold Run, 40 Pectarena, 3s. 9d.  
20 Chicago, 16s. 5 Great Laxey, £16½ 15 Pateley Bridge, £2½  
100 Chontales, 11s. 50 Hultafall, 10 Richmond, £2½ (ex div.)  
2 Carr Bros. 40 Javali, 5s. 9d. 10 Roman Grav., £6 13s. 9d.  
50 Colorado, 29s. 6d. 40 Kapanga, 9s. 6d. 50 Tyn-y-Fron, £2½  
10 D'Eresby Cons., 4s. 25 Leadhills, 3s. 6d. 20 Tankerville, £2½  
3 Dolcoath, £23½ 50 Llanywdd, 40 Roman Grav., £6 13s. 9d.  
60 Don Pedro, 17s. 6d. 30 Mellanar, £4 3s. 9d. 40 Wheel Crebor, £2  
20 Devon Cons., 3s. 6d. 10 Marley Valley, 11s. 20 W. Greenvale, £2  
10 East Pool, 60 North Laxey, 10 W. Pectarena, £2½  
50 East Caradon, 4s. 6d. 50 New Quebrada, 3s. 20 Wye Valley, £2½  
30 East Chiverton, 25 Pandora, 10s.  
25 East Lovell.

CHAPEL HOUSE COLLIERY.—FOR SALE, FIFTY SHARES (£5 each, fully paid), at £2 11s. 3d. per share for cash.

\*. DOLCOATH.—These shares have been easier during the past week, but close with a firmer tendency at 16s. to 18s. The report just received is considered very satisfactory and encouraging. The shares are likely to go much higher before long.

IMPORTANT.—Owing to the general depreciation which has taken place during the past few months, many really SOUND STOCKS and SHARES may now be secured on very advantageous terms. Investors should, therefore, embrace the present favourable opportunity of purchasing before the inevitable reaction sets in.

A complete "List of Investments" for the present month (containing latest prices and a large amount of useful information) may be obtained free on application to Mr. BUMPUS.

SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.

**WILLIAM HENRY BUMPUS, SWORN BROKER.**

Office: 44, Threadneedle Street, London, E.C.

BANKERS—The NATIONAL PROVINCIAL BANK OF ENGLAND, E.C.

**MESSRS. JONES AND HOUSTON, 25, CROSBY HALL  
CHAMBERS, LONDON, E.C.**  
STOCK AND SHARE DEALERS.

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**RHYDALUN.**—This is the most promising mine in the Mold district. The monthly profits are from £300 to £400 through drivages alone, and the shares most probably will have a like rise to Don Pedro. Full information on application.  
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"HOW TO INVEST"

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ALL BUSINESS TRANSACTED FREE OF ANY CHARGE FOR COMMISSION.

Notice to Investors and Speculators.

**MR. BUDGE has SPECIAL BUSINESS** in—  
120 Almada, 3s. 9d. 100 Exchequer, 4s. 50 Monydd Goidu.  
55 Birdseye Creek, 13s. 25 Grogwinlon, £2½ 75 Prince of Wales.  
100 Bodidria, 50 Glenroy, 10s. 6d. 150 Penstruthal, 3s. 6d.  
20 Court Grange, 12s. 20 Gawton, 6s. 9d. 70 Pectarena, 3s. 9d.  
100 Cambrian, 20 Hornachos, 20 Phoenix, £2½  
40 Chapel House, £2 10 9 65 Kapunda, 20s. 6d. 50 Red Rock.  
60 Cakemore, 75 Llanywdd, 40 Roman Grav., £6 13s. 9d.  
2 D'Eresby Cons., £7½ 100 East Chance, 11s. 100 Tamar Silver-lead and  
45 Devonport and Tiver- 5 Minera, £2. Fluor-spar.  
ton Brewery, 50 Marke Valley, 10s. 6d. 10 Van, £17.  
100 Don Pedro, 18s. 110 New Zealand, 16 Wheel Kitty, 7s. 6d.  
5 Dolcoath, £23. 100 Parys Mount, 6s. 6d. 50 W. Wye Valley.

BUYERS or SELLERS of any of the above, or holders of any Stocks or Shares not readily marketable, will do well to apply to Mr. BUDGE.

SPECIAL BUSINESS in Frongoch shares as Buyer or Seller.

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ESTABLISHED 1853.

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Colorado. Kapanga. United Mexican.  
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East Van. Pateley Bridge. Wye Valley.  
Eberhardt. Roman Gravels. West Wye Valley.  
Great Laxey. Richmond. Wheel Fever.  
Gas Light and Coke. South Frances. Wheel Grenville.  
General Credit. Tankerville. West Chiverton.  
Hultafall. Telegraph Construction. Yorke Peninsula.  
BANKERS: LONDON AND WESTMINSTER.

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Has BUSINESS in—  
Colorado. Leadhills. Richmond.  
Don Pedro. Llanywdd. Sierra Buttes.  
Eberhardt. Port Phillip. St. Harmon.  
Gold Run. Pectarena. Wye Valley.

"THE WEEK."—A SEPARATE EDITION from that which appears in the Mining Journal is published every Wednesday evening, containing "Notes and Hints on the Stock Markets," with Closing Prices. May be had on application.  
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30 Gorsedd and Mer- 100 Morfa Du, 16s. 100 Santa Barbara, £1 12 6  
lyn, £2½. 100 Cwm Brwyno, £2. 2 Rhydalun, £41.  
50 Hultafall, £2½. 50 Frongoch, £2½. 20 Great Holway, £4.  
15 Hornachos (off. wtd.) 100 Bettws-y-Coed, £1½.  
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**FOR SALE, FIFTY BODIDRIA LEAD MINE** fully paid, Limited, at 12s. 6d.; also TEN RUBY CONSOLIDATED at 10s. each, cash.  
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TO SHAREHOLDERS AND OTHERS.

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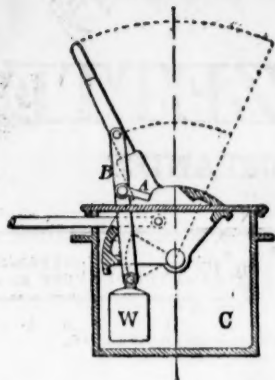
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Capital £4,000 Shares of £5 each.  
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Notice is hereby given, that the directors of this company have DECLARED a  
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And, Notice is hereby further given, that the Transfer Books of the company  
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Offices: 44, Coleman street, London, E.C., 25th January, 1879.

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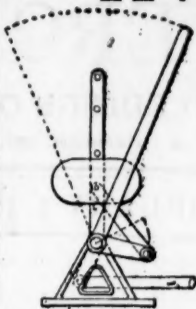
**THOMAS BROTHERS,  
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# SWITCHES AND CROSSINGS, FOR RAILWAYS AND TRAMWAYS, WITH PATENT LEVER BOXES.



Hartley's Patent Lever Box,  
REVERSIBLE UNDERGROUND,

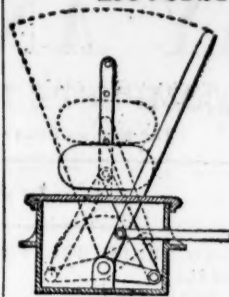
Can be set to work either way; by turning over the catch at A and reversing the lever, the weight W swings over to C, the catch preventing its return until again turned over. The reversing is effected with very little power, as the weight is raised but a few inches in the operation.



HARTLEY'S PATENT  
LEVER BOX.

Specially designed for Colliery Workings, or where economy of space is an object. Is reversible, and can be locked either way, or dead-locked, so as not to work at all.

Hartley's Patent Locking and Reversible Lever Boxes,



Will set over both ways, can be locked so as to work on one side only, or the switches can be locked on either side, so as not to work at all. Takes up less room than any other, as the weight does not turn over; works equally well if full of water; can be supplied at the price of an ordinary lever box.

**Tank Locomotives, Siding Stops, Wheels, Rails, Chairs, Spikes, Bolts,**

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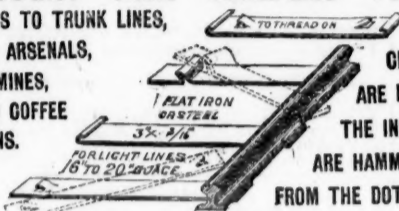
Iron and Steel Pit Cages, Wrought-iron Roofs, Headgears, Girders, Turntables, Patent Coal Tip, Boilers, Engines, Water Cranes.

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WROUGHT IRON SLEEPERS TO FIT ANY RAIL, DISPENSING WITH SPIKES AND ALL LOOSE PIECES.  
FOR FEEDERS TO TRUNK LINES,  
QUAYSIDES, ARSENALS,  
FORESTS, MINES,  
SUGAR AND COFFEE  
PLANTATIONS.



THE OUTSIDE  
CLIPPING SLEEPERS  
ARE LAID FIRST, THEN  
THE INSIDE SLEEPERS  
ARE HAMMERED UP AS  
FROM THE DOTTED LINES.



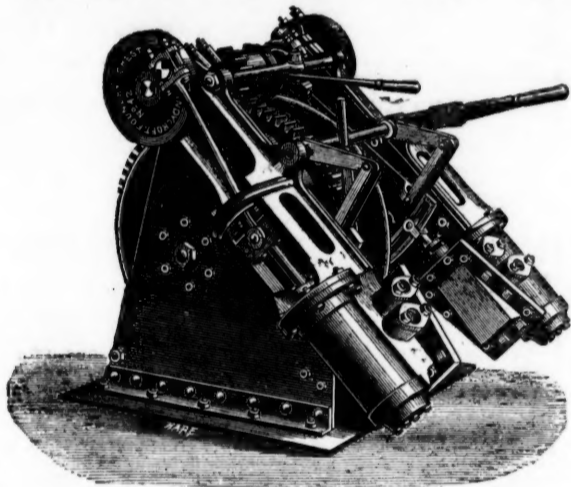
7 MILLIONS  
OF THESE SLEEPERS  
ARE IN USE IN  
ENGLAND, FRANCE,  
GERMANY, BELGIUM.



FOR CONTRACTORS,  
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BRICKYARDS,  
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QUARRIES.

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FOR MINES AND COLLIERIES,  
DESIGNED FOR WORKING WITH COMPRESSED  
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Specially designed to take up the least possible space.  
BEST MAKE, STRONG, SIMPLE, AND CHEAP.  
All made with two cylinders, to any size.  
Single or double drum, as required.

Photographs and Estimates on application.

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(Late the Mold Foundry Company. Established 1838).  
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Machinery.

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ARE THE BEST IN THE MARKET FOR  
ACCURACY, DURABILITY, AND DESIGN.

ESPECIALLY ADAPTED FOR COLLIERIES, MINES, IRONWORKS, BRICKWORKS, AND RAILWAYS.

**SPECIALITE!!—Pit-bank Weighing Machines, with our latest improved Double Steelyard Indicator. NO LOOSE WEIGHTS. Simplest and most perfect ever brought out.**

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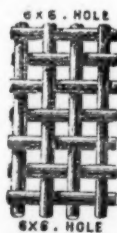
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CAPITAL £30,000, IN 6000 SHARES OF £5 EACH.

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## PROSPECTUS.

This company is formed for the purpose of acquiring the lease and plant of and for working the valuable mines, veins, lodes, and seams of lead and all other metallic ores in and under the farms and lands known as Talley Demeane, Penygarey, Cillynfawr, and Bwlchyryd, situate in the parishes of Talley and Llanawel, in the county of Carmarthen, and containing about 201 acres. The company have also taken other powers in the Memorandum of Association for more advantageously working the mines comprised in the said lease or under any adjacent lands.

The lodes of the mines are a continuation westward of the celebrated lodes of the Nant-y-Mwyn Mines, which have been worked to immense profit. The sett is extensive, running about one mile from east to west, and the same extent north and south, and contains a number of well-defined lodes.

The property is held under lease, dated 16th November, 1878, for 21 years from Michaelmas, 1878. The yearly rental is £20, merging into a royalty at the low figure of 1-16th.

Plans, showing the exact position of the lodes, with reports by eminent and practical mining engineers, may be obtained, and specimens of the ore seen at the company's offices.

The mines are about seven miles from the railway stations of Llandilo and Talley Road, so that the produce can be conveyed thither at little expense. The projected railway from Llandilo to Lampeter will pass within a quarter of a mile of the mine, and will when constructed be of great advantage to this property. The extent of work already done may be seen from the plans and reports. It includes a deep adit level driven upwards of 250 fathoms, which effectually drains the mine, thereby saving the expense of pumping machinery. Two other levels have been driven above this. A shaft has been sunk from the surface connecting these levels. All these works have been done at a large expenditure. Judging from the quantity of ore the mines have already yielded, and the present existing defined lodes, together with the favourable reports of experienced mining engineers, it is confidently anticipated that with a further moderate outlay in the erection of necessary machinery, and for further development, the mine will be productive and profitable.

The services of Mr. R. J. Frecheville, Associate of the Royal School of Mines, who has had ten years practical experience of mining, both at home and abroad, have been secured as consulting engineer for the company.

The vendor has agreed to dispose of his interest for £15,000, of which £1000 is to be paid in cash, upon transfer, and £1000 by instalments—viz., one moiety in six months and the other in twelve months. The balance in paid-up shares of the company, which shares shall not be transferable until a dividend of 5 per cent. has been paid to the ordinary shareholders out of profits, nor until 1000 other shares shall have been applied for and allotted.

The only contract entered into on behalf of the company is dated 23rd December, 1878, and is made between John Henry Outhwaite of the one part, and Alfred Stephen Groom for and on behalf of the company of the other part, being the con-

tract for the purchase of the property and plant, which, together with the Articles of Association, may be seen at the offices of the company.

Applications for shares may be made to the bankers on the form enclosed in the prospectus, or to the Secretary of the company. Should no allotment be made the deposit will be returned without any deduction; and should a smaller number of shares than those applied for be allotted to any applicant the balance of his deposit will be applied towards the amount payable on allotment.

Prospectuses and forms of application for shares may be obtained at the offices of the company, or of the bankers.

No promotion money whatever will be paid. The preliminary expenses will be confined to the amount actually expended in the formation and registration of the company.

## EXTRACTS FROM THE REPORTS OF WELL-KNOWN MINING ENGINEERS.

Capt. JOSEPH EVANS, in his report, dated April 11, 1878, says:—There are four lodes, running nearly east and west. I would recommend you to open the engine-shaft to deep level, where you will find a branch of lead ore yielding 3 tons per fathom. I have seen in the stopes 14 in. of solid lead. The mine bears evidence for itself, and only requires a little time to make it one of the most profitable in Wales.

Also, Capt. W. HANCOCK, in his report, dated Nov. 30, 1878, says:—In my opinion you will be amply remunerated for your outlay (for further information see plan and section recently made). A great feature is the mine can be worked at a considerable depth without the aid of pumping machinery.

R. J. FRECHEVILLE says:—I visited your Llanawel Mines, near Talley, South Wales, and found that you had in your No. 4 level a vein showing 4 in. of lead. As this is at a depth of not more than from 15 to 20 fms. below the surface, and the hill rising above you gives a large quantity of back, I consider it to be an exceedingly favourable prospect. In the No. 2 and No. 3 levels there are at least two other veins; from their appearance and the general character of the ground, I am of the opinion that they will amply repay further explorations. The No. 1 or deep adit will drain these mines for some years to come, and thus obviate the necessity of erecting pumping machinery. The kills which form the country rock, and the eleven course which is in close proximity to your mines, are favourable indications of this class of mine. The other conditions of working are favourable. I think from what I have seen that you have a valuable property.

Capt. W. T. BRYANT, in his report, dated Dec. 20, 1878, says:—You have in this mine a valuable property, and from appearances I am of opinion that it will justify the outlay of capital for development, and well worthy the consideration of capitalists as a good investment. I have confidence in recommending it as such.

## Lectures on Practical Mining in Germany.

## CLAUSTHAL MINING SCHOOL NOTES.\*—No. CVI.

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,  
Mining Engineer, Wakefield.(Formerly Student at the Royal Bergakademie, Clausthal).  
(The Author reserves the right of reproduction.)

## SECTION V.

As we have before mentioned, Sontag has devised a somewhat different construction. At the lower end of the shaft rods Kind's free falling arrangement is attached, the cap of Kind's apparatus being in this case a very large disc, by which the gripping and the loosening of the free falling portion is effected, the fall of the cutting tool amounting only to 22 in., which, however, in consequence of the weight of the tool is found to be quite sufficient. To the lower end of the free falling rod two cross arms are attached, whose length is a little less than the diameter of the shaft. To the upper of these two arms six rods, each about 16 ft. in length, are attached by means of socket joints and wedges. To the lower end of these rods the cutter bar is attached, and designed in such a manner that the cutters can be readily taken out and replaced. The two outer rods are the shortest, and the two inner ones the longest, so that the bottom of the bore shaft (enlarged portion) is cut funnel shaped. Each end of the bar receives three cutters, the knife edges of which are inclined about 30° to the horizontal. The six vertical rods carrying the cutter bar are stiffened and strengthened by horizontal and inclined ties. The ends of the lower cross arm have after cutters attached, and serve partially as a guide to keep the apparatus vertical as it falls.

This method of boring, devised by Kind, possesses the great disadvantage that the shaft has to be bored in two operations, since otherwise the space on the circumference between two cuts of the tool is too great, and if the rotation of the cutting tool be made so slight each time as just to suffice for a proper advance of the tool at the circumference, this is too little towards the centre of the shaft, where the cutting chisels tend rather to slide down against the sloping edge already formed, and thus pushing the cutting tool aside slightly out of a vertical, or rather central, position. This tendency became in some instances so great that the centre of the shaft deviated at the bottom more than 1 ft. out of the vertical through the centre of the shaft at the upper end. In order to obviate the above disadvantage M. Lippmann devised a different construction of the cutting tools, and which has been recently successfully employed at the Rhine Elba Colliery, Glensienkirchen. In this construction the cutter bar, which is forged out of the best wrought-iron, has the shape of a double letter Y, placed with the lower one inverted.

The under side of this cutter bar has a groove, in which ten steel blades or cutters are fixed by means of keys, two blades on each of the four outside arms and two blades attached to the straight central portion. The blades thus cut out trapezoidal and triangular pieces in the bottom of the shaft. The under edges of the latter two are convex, so that the centre of the shaft is about 8 in. deeper than the rest of the shaft bottom. The frame (or holder for the cutter bar) consists of a solid central rod, to which four diverging arms are welded towards the lower half. The centre rod is dovetailed, and fastened with rectangular packing to the upper edge of the central straight portion, and the four branches are attached in a similar manner to the four arms of the cutter bar. The upper end of the centre rod is turned circular, so as to slide readily within the free falling arrangement, the upper end of the rod having a tongue piece fastened in a socket hole bored out to receive it. Towards the upper portion of the bar a 13-ft. long rectangular plate, which serves as a guide to keep the cutting tool vertical, is inserted in a slot cut to receive it. The weight of this cutting tool is about 42,000 lbs. (nearly 19 tons).

The shaft rods were at first made of wrought-iron, afterwards pine wood, and more lately again iron from 3 to 4 in. square and 20 to 30 ft. in length has been used. The separate rods of wood, which are connected together by ordinary screw joints, are about 16 ft. long and from 6 to 7 in. square. They are usually made of two separate pieces connected together, and in order to stiffen them

they are covered with iron plates. The wooden shaft rods, on account of their stiffness and elasticity, and that they lose their weight when in water, are much more advantageously used than the iron ones, which would be still heavy in water, and might more easily become bent. These disadvantages, however, are obviated by the use of sliding or free falling apparatus.

The shaft rods are attached at the surface through the intervention of a swivel, chain, &c., to the end of the boring lever. The lever consists of two pieces of wood, each 14 in. broad and 15 in. deep, laid one upon the other, and bound together with iron hoops. The lower portion of the beam is made of beech wood, and the upper of pine; so that the upper portion, which is more subject to extension, may be more elastic. That end of the beam to which the shaft rods are attached is made with a circular segment, on which the chain laps, so as to dispense with the necessity of a parallel motion. The arm of the beam to which the shaft rods are attached is 11 ft. long, that which is attached to the cross head of the piston rod is 12 ft. long; the piston cross head is attached to this end of the lever by means of a chain.

At the sinking at St. Vaast the bore lever rested by means of an iron axle on two open sockets, so as to allow of the beam being lifted out of position and removed from above the shaft, which is necessary to allow the boring tool to be raised out of or lowered into the shaft. When it is desired to raise the beam out of its position this is done by lifting the end over the shaft by means of a windlass, and the other end by means of a pulley block, when it is easy to withdraw the beam, so as to leave the shaft free. At Styningen the sockets in which the iron axle of the boring lever rested were fixed on a strong oak frame provided with four wheels. This carriage could thus be readily run forward or backward from the mouth of the shaft on to a short tramway, and by means of iron clamps could readily be fixed tight in any desired position. The carriage was moved forward by means of pinch bars. At Glensienkirchen the rocking beam was made of oak strengthened with iron plates and stretchers. The beam was 19 ft. 9 in. long, the boring rods being hung from the shorter arm, which was 6 ft. 7 in. long. The iron axle of the beam rested on a double pivoted chair, so as to enable the beam to be readily moved aside, leaving the mouth of the pit uncovered.

The end of the lever to which the piston rod is attached is somewhat prolonged, and moves up and down between two iron rods, which are joined together at the top by means of a broad plate, against which the end of the beam strikes when the shaft rods are allowed to fall, thus preventing the piston striking against and breaking the cylinder cover. The two iron rods are attached on the under side to a spring arrangement for cushioning, or rather bringing the downward motion of the rods to a quick yet gradual stop, preventing any continued vibration of the rods or beam, and facilitating a reverse motion of the piston and shaft rods. This spring arrangement consisted at St. Vaast of one or two oak pieces of wood, about 27 ft. in length, which being fastened down at one end by means of piles 10 to 13 ft. in length sunk into the ground, when struck from below at the other end act as a very powerful spring. At Styningen the spring arrangement consisted of spring beams placed above and below the end of the boring lever, the spring beams passing through the walls of the bore house, and being fastened at the other end between piles sunk into the ground; the attachment being so that the spring beams could be fixed at any desired height above the ground. At Glensienkirchen the end of the long arm of the boring lever is attached, by means of a long connecting rod and short chain, to the end of a balance beam of oak, which is pivoted, or hinged, at the opposite end, and suitably loaded to balance the weight of the boring tools.

In consequence of the great weight of the apparatus it is necessary to employ steam power in moving the boring lever. At St. Vaast a single acting steam cylinder was used, which is open below, but provided at the top with a cover; steam is allowed to enter above the piston, which is then driven down; the boring rods, &c., attached to the opposite ends of the lever being at the same time raised. On allowing the steam to escape from the upper side of the piston they fall by their own weight. The valve motion is worked by hand, so that the speed and the height of fall can be altered to suit the varying nature of the rocks which are being bored through. In order to render the hand motion of the valves as easy as possible double seated or Cornish valves are used; rotary piston valves, such as Wilson's, would also be suitable. The piston cross head is provided with two rollers, which run in vertical guides. The cylinder employed at St. Vaast was 24 in. diameter, and the greatest possible stroke 39 in.; with a steam pressure of four atmospheres the cylinder was capable of raising a weight of

25,000 lb., or about 11 tons. The distance between the attachment of the piston and that of the rods was 27 ft.

The boring lever at Glensienkirchen was actuated indirectly from a steam-engine, through the intervention of a crab, consisting of two iron axles, the one carrying a large cog-wheel, and at its end a disc, having a crank pin (whose distance from the centre can be varied) attached to it. A long connecting rod connects the crank pin and the end of the long arm of the boring lever. The other, or rather the driving, axle carries a spur wheel and a fly wheel, and at its end a chain grooved pulley, over which an endless chain passes from the pulley on the axle of the steam-engine. The crab is put into gear or out of gear with the engine by means of an ordinary lever clutch.

The raising and lowering of the apparatus was effected at Styningen at first by means of a 12-horse power engine, which was afterwards replaced by a 20-horse power rotary engine, which was at the same time used for pulling and pumping. The rope from this winding-engine passed over a pulley placed at a height of about 47 ft. in the engine-house. At St. Vaast a 20-horse power winding-engine was used for raising and lowering the rods. The cylinder was 16 in. in diameter, and had a stroke of 28 in. The gearing arrangement was as follows:—The first driving-wheel 16 in. in diameter, the first driven wheel 65 in. in diameter; the second driving wheel 33 in. in diameter, and the second driven wheel, on the same axle as the winding drum, 9 ft. in diameter. The smallest diameter of the winding drum is 40 in. The steam pressure used was four atmospheres, so that the winding-engine with a speed of 30 strokes per minute was capable of raising a weight of 25,000 lbs. at a speed of from 6 to 8 in. per minute. This velocity, which is small, does not appear advisable to exceed, as the tools will always slide somewhat against the sides of the shaft, which are never perfectly smooth, and at a greater speed the tools catching against the sides of the shaft might cause breakages. The raising and lowering of the apparatus is effected by means of a steam crab fixed on oak sleepers, and bolted down to brick or foundation walls, between which the balance-beam moves. The engine of the steam crab was a single cylinder horizontal 40-horse power engine, provided with reversing gear. The first driving wheel of the crab runs loose on the driving axle of the engine, and can be put in and out of gear with a lever clutch. A powerful break allows of the apparatus being lowered without steam. The winding drum of the crab is of cast-iron, grooved so as to receive the (2½ in. iron) links of the chain, which is made fast at the opposite end to one of the beams of the boring tower; the chain passes over a pulley fixed on the same beams, and afterwards beneath a block pulley, from which the apparatus is suspended.

The surface arrangements at St. Vaast included a boring tower, boring house, and engine house. The bore tower was a square building (28 ft. by 28 ft.), and 43 ft. in height. The working shaft was placed in the middle, and carried down to a depth of 10 ft. (where the first working scaffold was placed), with a diameter of 17 ft., so that above the scaffold there was a clear space of 43 + 17 = 60 ft., for handling the rods, tools, &c. From here down to the water level, 110 ft., the shaft is carried in masonry, with a diameter of 14 ft., so that the large boring tool, which is nearly 13 ft. in extreme dimensions, can readily pass. In the walls of the bore tower four openings, 10 ft. wide and 31 ft. high, are left. The first, which gives access to the boring house, is destined to receive the tools, rods, &c.; though the second opposite the sludger is passed, and the debris, &c., is thereby thrown down in open air; a third opening allows the passage of the wire-ropes from the engine-house; and the fourth, which during the boring serves no particular purpose, is of later use when the tubing has to be brought in and lowered. It is advisable when circumstances do not prevent it to build the boring tower at once as part of the permanent arrangements for the winding-engine house, and the base of the head gear, rather than make a temporary structure, which must be at the same time solidly built, and, consequently, costly both in money and time, as its erection occupies considerably time, and when it is being pulled down operations in the shaft must be suspended.

## MANIPULATION OF GOLD ORES.

Several valuable papers connected with the manipulation of gold ores recently read before the California State Geological Society have been reprinted in pamphlet form at San Francisco for private circulation. In describing an improved form of batéa, or gold-washer's prospecting bowl, Mr. Attwood remarks that in 1853 he improved upon the common Brazilian batéa, rudely fashioned with adze and chisel, by having a few batéas turned smooth to the centre in a lathe. A disc 17 in. diameter is turned conical 12°, and will have a depth of 1½ in. from centre to surface; the thickness may be ½ in. The best wood to use is Honduras mahogany, and the disc will, of course, require to be 2½ in. thick. As a concentrator for small parcels, or to test the working of a larger one, nothing that Mr. Attwood has seen in operation can equal it. To test the value of gold quartz Mr. Phillips in his Metallurgy of Gold and Silver, says: "The most accurate results are obtained by carefully washing a 4-lb. sample in the batéa." After having in this way concentrated the gold in about an ounce of sand and pyrites, this residue may be either subjected to assay or the sulphides dissolved by nitric acid, and the gold extracted by amalgamation with a little mercury, which is subsequently volatilised, and the gold weighed. In either case the calculations are made on the 4-lb. sample, and when the residue has been subjected to fusion very accurate results are obtained. As to the mode of using the batéa Prof. Warrington Smyth, of the Royal School of Mines, London, says: "A quantity of the material to be operated upon having been mingled and well stirred by hand with water in the bowl it is shaken from side to side and circularly with a variety of movements suited to the form and to the nature of the ore only to be acquired by long practice. The settlement and separation of the gold is partly assisted also by striking one side of the bowl occasionally, so as to arrest the course of the particles for the moment; and finally, several different layers or lines of mineral matter may be distinguished from one another, the gold occupying the lower position, then the magnetic iron, then the pyrites, and lastly other wastes."

In a paper on the Milling of Auriferous Veinstones Mr. Attwood called attention to the condition of gold in the Californian lodes; it being now generally admitted that all the gold except that chemically combined with tellurium exists in a metallic state. The Californian term sulphurets was first applied to the pyritic matter that is found associated with quartz in the gold-bearing veins in 1859, about the time Mr. Deekin introduced the chlorination process for the extraction of gold at his works near Nevada City. Mr. Attwood presented to the society a collection of veinstones embracing nearly all the sulphides met with in the Californian mines. He pointed out the absolute necessity, in order to liberate the gold, of having the rock reduced to a very fine powder, so fine that on sifting 90 per cent. of it would pass through a sieve of 10,000 holes to the inch. The stamped veinstone issuing from the mills is associated with gold in four different states—free gold capable of concentration with water; laminated gold easily carried off with water; gold mechanically mixed and enclosed in the coarser particles of pyrites which require to be reduced finer to liberate the gold; and telluric gold. He considers stamping preferable to crushing and grinding, and points out that it is a mistake to let the pans do the work of the stamps. He suggests that the iron now imported at a heavy duty from Great Britain for Californian stamping mills might be replaced by Californian semi-steel, produced direct from the magnetite, of which large deposits exist in the State. He shows that the loss in the amalgamation of the pyritic matter in wooden barrels need not exceed 1 per cent. Mr. Attwood maintains that there are no rebellious gold ores; and suggests that a 10-lb. or 15-lb. sample of the veinstone can be forwarded to the society free of expense (through the liberality of Messrs. Wells, Fargo, and Co.), and when received he will get a committee to examine and report upon them. In 99 cases out of 100 when people talk of having large lodes containing rebellious ores assaying high, though the gold is not obtainable by the ordinary mill process, it is, he maintains, because the samples selected for assays were not fairly taken, and the real

\* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergstrath Dr. von GROUNDACK, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

trouble arose from the fact of there being little or no gold in the lode to save.

### EXCAVATIONS FOR THE NEW WATER SUPPLY FOR THE TOWN OF AIX-LA-CHAPELLE.

Since the year 1866 the selection of a suitable source of water supply for the town of Aix-la-Chapelle has formed a subject for frequent discussion among the authorities. Numerous projects have been successively considered and abandoned. Of these, the three first offered involved the utilisation of existing water courses, but the impurity of the water, and the difficulty of dealing with vested interests, led to the abandonment of these schemes. A fourth project was to sink shafts in the marl, near Lemiers, and to pump the water from them into a reservoir, to be constructed upon one of the heights near the town. This, with some others subsequently offered, was found to be open to serious objections. Attention was next turned to the carboniferous limestone, which is largely developed in the neighbourhood of Aix-la-Chapelle. The beds of this formation are much fissured, so that the water readily finds its way down from the surface to its base of slates and sandstone. The experience gained in the mines showed that as depth was attained the flow of water rapidly increased; hence it was clear that an abundant supply might be obtained from that source. Herr Baur proposed to sink shafts at several points in the limestone lying to the south of the town, and to drive out from the bottom of those shafts collecting headings or cruts. The water so obtained was to be pumped up, as in the case of the sinkings in the marl, to a reservoir situate at a sufficient height above the town. Before this project had received full consideration another was brought forward by Herr Braun, offering greater advantages than any of the preceding. From the Belgian village of Dolheim to the Prussian village of Haussat there runs a narrow strip of limestone, which at the latter place disappears beneath the Aix-la-Chapelle sands, but reappears further on. This strip is about 2 miles long and 600 yards wide, and is similar petrographically to the Aix-la-Chapelle limestones. The beds are known to be very rich in water of an excellent quality, and as they are offered the additional advantage of affording a new source which might be drawn upon to any extent without affecting those of the present water supply, or of the streams running past the town, Herr Braun's project was favourably regarded, and it would doubtless have been adopted had not another scheme of yet greater promise been at that moment brought forward.

All the foregoing projects involved more or less pumping, and consequently entailed heavy expenses. The new scheme proposed by Herr Honigmann was free from this defect; according to his plan the water was to be gained by an adit, the mouth of which should be situate above the level of the highest parts of the town.

A person going from Aix-la-Chapelle, starting from the Adalbertstrasse, and following the direction of the Aix-la-Chapelle and Trier highway as far as Cornelymünster, and on to Frieswath, passes over, on the line of the strike, all the limestone formation lying to the south of the town of Aix-la-Chapelle. The most important of these beds is the so-called "Eynatten," or "Eich," limestone. The plateau situate between Aix-la-Chapelle and Brand forms the watershed between the Wurm and the Münsterbach, the limestone beds on one side of the Brand constituting the drainage area of the former stream, and those on the other side that of the latter. The Münsterbach has the more extensive area, and by much the larger quantity of water. A comparison of the level of the two valleys, and especially of those of the Wurm at Aix-la-Chapelle and the Münsterbach at Cornelymünster, shows clearly that the latter lies considerably above the former town. At the part mentioned the Münsterbach is 153 ft. above the market-place, and 200 ft. above the water level of the Wurm at the Steffensplatz. An adit driven under the Brand plateau would, therefore, bring down by gravitation to Aix-la-Chapelle the water of the Münsterbach. But as there were serious difficulties in the way of the appropriation of the water of that stream, Herr Honigmann proposed to terminate his adit in the Eich limestone. Thanks to the great difference of level, his project, while placing the mouth of the adit at a sufficient height above the town to supply every part of it by natural pressure, leaves a minimum height of 120 ft. of rock above the roof of the excavation.

It is the easterly prolongation of the above mentioned limestone beds that in the neighbourhood of Lichtenbusch is found overlain by thin sand deposits. An anticlinal ridge its flanks fall away to the north and to the south, and pass underneath the coal shales, and is lost near the village of Neiderforstbach. These Eich limestone beds are nowhere traversed by stream valleys, and are full of water up to the height of the Geulbachquellen, a spring situate at least 200 ft. above the floor of the projected adit. A spring in the neighbourhood of Eich affords some indication of what might be expected from this source, the quantity discharged in the driest season being 30,000 cubic feet in 24 hours. On the data obtained from this spring, and from the influx of water in the neighbouring mines, it was estimated that the proposed adit would furnish at least 150,000 cubic feet in 24 hours.

According to Herr Honigmann's scheme the adit was to be first driven up to and through the north flank of the limestone ridge. Here it was anticipated sufficient water would be met with. But in the event of the water proving insufficient in quantity, or unsuitable in quality, the adit was to be continued horizontally to the south flank. The adit is destined to fulfil the double purpose of an outlet for the water and a reservoir. In this view it is to be driven horizontally, and after completion is to be dammed up at the mouth. By this means not only will all the water be reserved for use, but it will be kept at an agreeable temperature, cool in summer and comparatively warm in winter. The scheme was accepted in July, 1870, and work was shortly after commenced. The mouth of the adit is in a little side valley of the Boerbach, at a distance of about four miles from the town. The length of the main which will be required to conduct the water to the town is about 5320 metres. The height of the floor of the adit having been given as 217.5 metres above the zero of the Amsterdam water-mark, we have the following interesting figures concerning the pressure to be obtained in various parts of the town:—

	Above Amsterdam water-mark.	Head. Metres.
Pulverthurm Promenade ... ..	207.5	10.0
Krugenhofen ... ..	203.3	14.2
Jacobsthor ... ..	198.2	19.3
Commencement of Kupferstrasse in Ludwigsalles ... ..	197.0	20.5
Sand Kaulstienweg (Knipp) ... ..	191.3	26.2
Railway Station, Marschiersthor ... ..	186.4	31.1
Polytechnicum ... ..	178.1	39.4
Markt ... ..	174.3	43.2
Adalbertsrunderplatz ... ..	158.5	59.0

It will be seen from the above figures that when due allowance is made for loss of head from friction in the pipes there will be sufficient pressure to supply every part of the town. The adit is 6 ft. wide and 7 ft. high, and is driven horizontally in a direction due south. The water met with in driving is carried out by a drain 1 ft. deep on the east side of the adit. The dislodged rock is run out on a narrow-gauge tramway in wagons having a capacity of 8 bushels. Throughout the first 600 metres the wagons were run back to the mouth of the adit, beyond this distance they were lifted by means of a simple winch through a shaft sunk for that purpose. Ventilation is provided for by special air shafts sunk along the line of the adit at intervals of 250 metres. The air is conducted up to the fore-breadth through zinc pipes 8 in. in diameter. The work at the fore-breadth is carried on by 8-hour shifts, two men being kept at the face of work. The driving thus proceeds continuously, except on Sundays and holidays. As far as possible all the work is let on contract.

During the year 1871 the driving was carried on at one heading only; but during 1872 and 1873 three headings were in operation, a drawing shaft having been sunk at a distance of 650 metres from the mouth of the adit. During 1874 and 1875 the driving was again confined to one point. In 1876 the completion of a second drawing shaft, at a distance of 1180 metres, again allowed the driving to be resumed at three points. At the first shaft a 20-horse portable

engine was employed to raise the water and the rubbish; but at the second shaft, which was in shale, a winch was sufficient for these purposes. By the end of the year 1876 the total length of driving accomplished was 1146.4 metres, made up as follows:—In 1871, 165 metres; 1872, 220; 1873, 315; 1874, 192; 1875, 92.9; and in 1876, 161.5 metres. The total length of the adit being 2415 metres to the southern flank of the limestone ridge, the distance remaining to be traversed at that date was 1268.6 metres. With the exception of the first metre of the driving, and a small thickness of clay stratum subsequently met with, which was removable by means of picks, blasting was constantly required. Ordinary black powder was used when the rock was moderately dry; in wet ground recourse was had to dynamite.

The indications obtained by the driving up to this point were such as tend to the conclusion that the adit would have to be continued to the anticlinal in order to obtain a sufficient quantity of water of the requisite quality. A further survey of this flank made by means of numerous borings, showed that the expectations formed of its water-bearing capacity were likely to be fulfilled. It was, therefore, determined to push on to this point with all possible speed, and as the hardness of the limestone did not admit of a more rapid progress from the single heading than about 100 metres a year, it was proposed to sink a shaft at a distance of 2000 metres along the line of the adit. To deal with the water here met with an engine was obtained of the horizontal type, having a cylinder 34.4 in. in diameter, and a stroke of 6 ft. The fly-wheel is 26 ft. in diameter, and weighs 23.6 tons. It is designed to work directly two 18.3 in. lift pumps, which are capable of raising from a depth of 100 metres 1000 gallons of water a minute. The superfluous power of the engine will be utilised in driving the rock-boring machines. The shaft is 7 ft. 3 in. by 10 ft. 3 in. A special compartment is provided for drawing the rubbish. It is situate about 16 yards west of the line of the adit, and will not communicate directly with the latter by means of a cross-cut, but will be carried down into the limestone to a considerable depth below the adit level.

In this way it is thought that not only will the water from the fissures in the limestone be obtained pure for possible subsequent use, but the water level in the limestone will be reduced below the level of the adit, and so allow several shafts to be sunk through the unaltered rock along the line of the adit. How far this supposition may be realised remains to be seen. The points selected for these shafts are situate 1420, 1620, 1942, and 2280 metres from the mouth of the adit. If all the headings so obtained be driven simultaneously the work will be complete in about three years. The pumping shaft was in July, 1878, already down 26 yards; the level of the adit would be reached at about 44 yards. The engine and pumps were, according to the terms of the contract, to be in position by Aug. 31 of last year.

Although during the driving of the adit this engine will be employed solely in expediting the work, it has been acquired with a view of having a reserve force available. For by carrying the shaft down deeper into the limestone water may be obtained below the level of the adit; the present yield of the latter varies between 70,500 and 42,800 cubic feet in 24 hours. Of this quantity one half comes from the sandstone beds of the coal shales, the other half is derived from the north flank of the limestone, into which the adit has now been driven 170 yards.

### Meetings of Public Companies.

#### PORT PHILLIP AND COLONIAL GOLD MINING COMPANY.

The ordinary general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Thursday, Mr. A. T. THOMSON in the chair.

Mr. J. W. PURCHASE (secretary) read the notice convening the meeting and the minutes of the preceding meeting, which were confirmed. The report and accounts were taken as read.

The CHAIRMAN said he had very little to add to the information contained in the report, which was as usual made as full as possible. The year had been a very uneventful one, but one of steady and continuous hard work. What seemed to be a very favourable feature was that the tributers, as they gained experience and knowledge of the necessity of working with greater economy, had been enabled to work poorer quartz at a profit than they had previously thought worth raising, and as they had a large amount of quartz of a poor quality in the mine this was especially satisfactory. The latest telegram advised a remittance of 3000, but the smallness of this was doubtless owing to the Christmas holidays, as the class of men who constituted the tributers were those who made Christmas a holiday time. The shareholders would have observed that a remittance had been received in every month of last year, and this was also a favourable feature, and tended to prove what had been stated—that the effect of the tribute system was to equalise returns. Each of the parties of tributers had a little capital of their own, which they employed in the deadwork of the mine, and many of them worked, unfortunately for them, at a loss, but many of the parties had contributed to the revenue of the company. At the same time the company was less liable to loss from this tribute system, as it was the capital of the tributers that was involved, and not theirs. While they worked the mines themselves there was sometimes a loss on the year's operations, and sometimes on a single month's returns, but during the past year no single month had shown any loss whatever. The shareholders would also have seen that there was an alteration as to the terms of royalty. What they were paying for the royalty was not a fixed condition, and they were waiting for a more permanent arrangement. During the past two sessions a Bill had been before the Legislature of Victoria to regulate mining on private lands. The Bill had been twice passed by one house or the other, but owing to the conflict existing between the two houses, it had lapsed. Mr. Bland, the manager, had been endeavouring to insert a clause for the purpose of regulating the settlement of mine owners with lessees, so that when the terms of a royalty could not be settled there should be an authority given by the Bill to settle the difference between them. The matter was, however, still in abeyance. During the year they had been obliged to pay the large sum of 13000, for water. Mr. Bland had been endeavouring to economise in this direction by using the water from the tailing pumps twice, otherwise the charges would have been more. Since the report had been prepared a letter had been received from Mr. Bland, which contained some satisfactory information. In it Mr. Bland said with regard to the present tribute system the arrangement had been working very satisfactorily, and by this means quartz was being raised at a profit which, under any other system, would have been left in the mine. The tributers were also economising and gaining experience, and there was no doubt that they would be able to raise a large amount of ore from the various levels, which was until quite recently looked upon as little or no value. A question had been raised as to the change which had been made in the investment of the reserve fund, which had now been invested in Consols in the names of the trustees—Mr. Cobbett and himself—the third trustee having died. They bought at 102 and sold at 105. It might not be known to many of the gentlemen present that there had been great political turmoil in the colony between the two Houses of Legislature, and this had gone on to such an extent that no useful measure could be passed because the two houses were engaged in fighting one another. In consequence of this state of things there had been an exodus of capital and capitalists, and there had been great want amongst the working classes. The Premier of the colony, with another member of the Legislature, was now on his way to this country as a deputation to the home Government to alter the constituency of the Act and to do away with the upper house altogether. The whole dispute seemed to have degenerated into a quarrel between capital and labour. Besides this a loan of five millions was to be raised—two millions of which would be asked for as soon as it was likely to be raised. For some time during the year the colonial stocks—Victorian bonds—became literally unsaleable, and the directors felt that as the reserve fund was put aside for the immediate necessities of the mine and might be called upon at any time for the working of the mine or the equalisation of dividends, they felt it to be very desirable that the reserve fund should be placed in some security which would be easily realisable. (Hear, hear.) They had, therefore, parted with the colonial bonds, which they did ultimately at a profit of 3½ per cent., and the money had been invested in Consols, and he hoped this would meet with their approval. The Chairman then moved the reception and adoption of the report and accounts.

Mr. J. R. MACDONNELL seconded the motion.

A SHAREHOLDER suggested the appointment of a third trustee for the reserve fund.

The CHAIRMAN, in reply, stated that under the deed they could not appoint another trustee until the number should be reduced to one.

A SHAREHOLDER said it had been stated in one of the papers that the company was at the end of its tether, that they were worked out. Was that a fact?

The CHAIRMAN replied that those who made this statement professed to know more of the mine than the manager and the directors, who were certainly not of that opinion. The whole of the information sent from the mines was always open to the shareholders, and this was all that the directors had to base their opinion of.

A SHAREHOLDER asked how long the lease had to run?—The CHAIRMAN said 21 years from the 1st of January, 1878. In reply to a further question he (the Chairman) said the amount invested in Consols as a reserve fund was 68290, which brought 68990, 4s. 6d.

The report and accounts were then adopted unanimously.

The CHAIRMAN then moved the payment of a dividend of 1s. per share, making, with the interim dividend paid in October, 2s. per share, or 10 per cent. for the year.

Mr. COBBETT seconded the motion, which was carried.

On the motion of the CHAIRMAN, seconded by Mr. COBBETT, Mr. John Randall Macdonnell was re-elected, and on the motion of the CHAIRMAN, seconded by Mr. MACDONNELL, Mr. Rivett Henry Bland, the managing director, was re-appointed. The auditors, Messrs. Ransford and Molinoux, were re-appointed, and the di-

rectors were instructed to negotiate for a reduction of the auditors' fees allowed by the Articles of Association.

The CHAIRMAN moved a vote of thanks to the managing director, Mr. Bland, for his able management of the company's affairs during the past year. Mr. Bland was so well known that he need say nothing more about him. So far as the directors and himself were concerned they were very glad that they had a man there upon whom they could place entire reliance. (Hear, hear.)

The motion having been seconded by a shareholder was carried.

The meeting then terminated with a vote of thanks to the Chairman and directors.

#### VICTORIA (LONDON) MINING COMPANY.

The general meeting of proprietors was held at the Cannon-street Hotel on Thursday, Mr. A. T. THOMSON, the Chairman, presiding.

Mr. JOHN WILLIAM PURCHASE (the secretary) read the notice convening the meeting. The report of the directors was taken as read.

The CHAIRMAN said he was sorry the directors could not offer the shareholders a better report. The South Clunes Company had been doing a little better since the report was drawn up. They had received a letter from Mr. Bland remitting 2250. The tributers at the mine were increasing, and the returns also. The best feature in the mine was the success which had attended the tribute system, and no doubt when the system became more developed and extended it would be attended with further success. The company had not been working at a loss. There was a sum in hand of 9320. 7s., which, added to the last remittance of 2250, gave a total of 11570. 7s. It was not quite equal to what they had in hand last year, when they paid a dividend, and, therefore, the directors had thought it better on the present occasion to abstain from the payment of a dividend. As soon as they had in hand 14080, the directors proposed to call a meeting and declare a dividend. With reference to the report—that they had it in contemplation to erect an additional ten-head battery, thus bringing the total up to 50 heads. There was no doubt they had been weak in batteries, and some time ago Mr. Bland urged that more should be erected, but for some reason the local directors were over-ruled by the directors in Melbourne, and the additional heads of battery were not erected. After a time it became obvious that the only way to make the mine prosperous was to increase the tribute system, and to enable this to be done it was necessary to increase the battery power, and eventually not only was Mr. Bland's suggestion complied with but it had been contemplated to erect 10 extra stamps. In conclusion, the Chairman moved the adoption of the report and accounts.

Mr. J. R. MACDONNELL seconded the resolution.

The CHAIRMAN, in reply to a SHAREHOLDER, explained that this company were really only shareholders in the South Clunes Mine, and therefore had nothing to do with the payment to the tributers. He might, however, mention that he believed the amount paid to the tributers was the same as in the Port Phillip, where the system had proved successful.

A SHAREHOLDER drew attention to the expenses, which he considered too large, but as the same subject was fully discussed at the last meeting he considered it unnecessary to more than allude to it again. It is sufficient to say that the Chairman again pointed out that the London expenses for secretaries, offices, and everything were only 1600 a year. The directors had foregone their fees for the past year, and, as a matter of fact, it was utterly impossible to cut down the expenses to a lower figure.

The resolution was put to the meeting, and carried.

The retiring directors—Mr. Alfred Cobbett and Mr. R. H. Bland—were re-elected. Mr. William Brookes was re-elected an auditor, and Mr. Richard Donagan was elected an auditor in the place of Mr. Sutton, deceased.

A vote of thanks to the Chairman and board closed the proceedings.

#### WEST CHIVERTON MINE.

A general meeting of shareholders was held at the offices of the company, Grasham Buildings, Basinghall-street, on Thursday, Mr. THOMAS SMITH in the chair.

Mr. GRANVILLE SHARP (the secretary) read the notice convening the meeting. The accounts (which were taken as read) showed a balance against the shareholders of 3474. 5s. 3d.

The CHAIRMAN said the committee were not able to present so good or pleasant a balance-sheet as they had been in the habit of giving to the shareholders, a matter which the committee regretted exceedingly. This was not, however, owing to any fault attributable to the management, but from the fact that since the last meeting they had had a continuation of misfortunes to contend against. In the first place, the market for mineral continued to be very much depressed, and, in fact, to such an extent as he thought they had never known before. Pig-lead was now selling at from 13. 15s. to 13. 17s. 6d. per ton, and the price of blende was equally low, and some of the lower qualities were unsaleable. But along with these bad prices they had had to contend with a series of accidents to the machinery and boilers, and in consequence of these accidents the most valuable part of the mine had not been available for working. This had occasioned a large amount of work and anxiety to the managers and engineer. The strictest economy had been practised in every department, and the working expenses had been reduced from about 14000, to about 9000, per month, and they hoped to make some slight further reduction. He would be happy to answer any question, and with these few remarks he would move the adoption of the balance-sheet and accounts, which had been circulated amongst the shareholders.

A SHAREHOLDER asked to what extent they were bound to continue the sinking?—The CHAIRMAN said no limit had been fixed, but lately the bottom levels had been under water, and the sinking could not be carried on. If they stopped operations the costs would amount to nearly 5000, a month. Up to the commencement of the past four months they had paid their way, and made a profit, but there had lately been a combination of misfortunes to fight against. In reply to other questions, the CHAIRMAN said during the past two years they had spent from 30000 to 40000 in machinery, and he believed they had now the most complete dressing machinery of any mine in Cornwall. He believed the machinery would realise even at the present time from 10,000 to 15,000. Besides the 6000, at their credit at the bankers (after paying 9000, for costs last week) they had a large quantity of lead and blende for disposal, the costs of producing which had been paid, although no credit was taken for it in the accounts. Owing to the accidents, to which he had previously referred, they had not been able to sell half the quantity of lead. If they could get to the best part of their ground he believed there would be no loss on the operations, but unless the price of lead advanced profits could not be expected. A rise of even 1d. per ton would make a wonderful difference to them, as their returns of lead and blende were something like 400 or 500 tons a month. They would make the best they could of the boilers as long as possible, and gradually replace them. The item of 9214. 18s. 11d., included interest to the end of the year, and they had from 180 to 200 tons of lead ready for the market, which was not taken as an asset in the balance-sheet.

A SHAREHOLDER referred to the items of deductions on account of over estimates, and suggested that it would be safer to add something to the deficiency on that account—say 13000.

The CHAIRMAN said a very accurate estimate could not be arrived at, but in many cases it had been on the right side, and not on the wrong.

He thought if they made a call to clear off the overdraft they would be able to carry on operations during the current four months without a call. He thought the estimate placed on the mineral on hand, which was the cost of producing it only, was a very fair one. He was quite prepared to say that, without a special consent of the shareholders, there would be no overdraft in future.

Mr. WEST seconded the adoption of the accounts, and the motion was then carried unanimously.

Capt. SOUTHEY read the following report:—

Jan. 28.—The following is our report of this mine:—The lode in the 160, west of shaft, on south lode, is 2½ ft. wide, producing good stones of lead ore; price for driving, 60. per fathom. In the 150, east of Batters' shaft, we have driven under the winze sunk below the 140; in the end the lode is 3 ft. wide, worth for lead 80. per fathom; price for driving, 60. per fathom. As soon as this level is drained of water we shall at once communicate this winze to it; this will open up and render available for stopping a very good piece of lead ground.—North Lode: In the 160, west of cross-cut, west of shaft, the lode is fully 8 ft. wide, worth for lead and blende 100. per fathom; price for driving, 90. per fathom. In the same level, east of cross-cut, the lode is 4 ft. wide, worth for lead and blende 80. per fathom; price for driving, 50. per fathom. In the 130, east of shaft, the lode is 3 ft. wide, worth for lead and blende 80. per fathom; driving by six men, at 90. per fathom. At the 110 Batters' shaftmen are, when not employed in repairs, cutting ground for balance-bob in south side of shaft. At the 100 six men are driving an east end shaft, on middle lode, which is 4 ft. wide, producing saving work for lead; price for opening 80. per fathom. In the 140, west of Hawkes' shaft, the lode is 3 feet wide, worth 60. per fathom for lead and blende; price for driving, 120. per fathom. The lode in the 110, west of shaft, is 2½ ft. wide, producing good stones of lead and blende; price for driving, 90. per fathom. A very small piece of balance-bob at Batters' shaft, coupled with some smaller ones to our pitwork, caused the water to rise to the 140, which then became so impregnated with corrosive matter as to destroy the condensing work of our engine, and we were compelled to replace it with new; it has also shown its destructive power by the continual breaking out of our boilers, on which a staff of men are continually employed in repairing; these drawbacks have been the means of preventing us working our most productive ground in the bottom part of the mine for three months, and of course have greatly interfered with our returns of mineral, and have to a great extent been the means of placing before you at this meeting such an adverse balance, but the greatest difficulty we have to contend against (and I am sorry to say it is one over which we have no control) is the very low prices we are getting for our mineral. The following figures, copied from our ore books, will enable you to form a correct idea of what the difference is:—In November, 1876, we received for No. 1 lead 180. 12s. 6d. p. r. ton, against 100. 3s. 6d. now; No. 2 lead, 100. per ton, against 60. 2s. 6d.; No. 1 blende, 60. 8s. per ton, against 20. 10s. 6d.; No. 2 blende, 30. 8s. 6d. per ton, against 10. 10s.; No. 3 blende, 20. 7s. 6d. per ton, against—last offer—5s. Of this class blende we have a large accumulation on the mine ready for shipment, which would leave a good profit provided we could realise only 3s. 6d. per ton. In order to mitigate this unusual depression we have been curtailing our working expenses in all directions, but in a mine of this magnitude the benefit accruing from this step cannot be felt at once, and although we have already reduced our costs from 14000 to 9000 monthly, yet we hope to be able to reduce it a little more. The bottom of the mine is looking very well. There is a good lode gone down in the bottom of the 160 at Batters'; the shaft is down to the 170, but no levels driven east or west, therefore we have this piece of ground intact, so that a rise of only 2d. per ton all round, with a market for our No. 3 blende, would again bring the mine into a paying state. The erection of the new balance-bob on the surface is in a very forward state, the pitwork is in good working order, and the engine is pumping remarkably well, so that we have every reason to believe the mine will be quickly drained of water, when the returns of lead and blende will be greatly increased.—RICHARD SOUTHEY, WM. ROBERTS, JAMES MOYLE.

Capt. SOUTHEY, in reply to a question, said the bottom of the 160 fm. level was

quite as good as the bottom of the 150 ft. level. "Barring" accidents, he believed both ends could be made to meet during the ensuing four months. At the present price of lead he estimated that their reserves would produce 20,000, and if the mine was his own he would not sell the machinery under 12,000. But as regards the valuation he put on the reserves, it must be understood that no one should take it that reserves would produce that amount of profit. Twelve months ago he valued the reserves at 40,000, but the markets for our mineral were altered, and although at the present time he might put a value of 20,000 on the (ores) reserves in the mine, it must not be understood that they would if brought to surface and sold return a profit of that amount. What he himself called reserves was the amount of profit that could be made on the return, and he would not say at the present price of lead and blende that the so-called reserves would give a profit. Only a rise of 11. per ton take place; it would alter the case in our favour, that it would place the mine in a paying position again.

Mr. HOCKING (the engineer) read his report as follows:— Since the last meeting of the shareholders the trial of the undergrate blowers for the use of anthracite coal, then referred to, has been made; and while they are effective in rapidly generating steam, I cannot pronounce them to be economical in the consumption of coal. A new pump, &c., has been fixed in Batter's engine, which is now working much better in consequence. We had a breakage to the balance-bob attached to this engine, which has been temporarily repaired; a suitable second-hand one has been purchased, and is now in course of erection. In consequence of this breakage the water was for some weeks in the bottom of the mine, and has since been more injurious to our boilers than heretofore. We have had the water analysed by Dr. Oxland, public analyst of Plymouth and Devonport, and the course he has recommended to counteract its injurious effects are now being experimented on; it will be of much importance if it should prove successful. No other repairs requiring consent have taken place. From an engineering point of view I do not hesitate to say that I should like additional boiler power to our pumping engines; it is not only desirable for economy of fuel, but ensures regularity of working; should be only glad when the financial position of the company will allow my views on that head to be carried out.—JOHN HOCKING.

On the motion of the CHAIRMAN, seconded by the Rev. J. B. HEARD, the reports were adopted, and ordered to be circulated amongst the shareholders, together with a report of the proceedings.

The CHAIRMAN then said the liquidators of the Cornish Bank had intimated that the overdraft must be paid, and to do this a call of 31. 5s. per share (3000 shares) would have to be made.

After a conversation it was decided that a call of 31. 5s. per share should be made, payable as follows: 11. 5s. on or before Feb. 28, 11. on or before April 28, and 11. on or before June 30, that interest of 5 per cent. should be charged on all amounts not paid within one month of those dates, and that no shares should be transferred upon which calls were due.

Mr. CROMBIE expressed a hope that the board would not incur any responsibility in any other bank without calling the shareholders together. (Hear, hear.) He also referred to the great depression which existed throughout the country, and said it was imperative that their men should submit to the altered circumstances of the times, and take lower wages. If this were not done it would be better to suspend operations.

Capt. SOUTHEY said the men had accepted a 10 per cent. reduction, and their average earnings were not now more than 55s. per month, lower than which he could not ask them to go.

A resolution was passed on the motion of the Chairman that the bank account should not be overdrawn without the consent of the shareholders.

The meeting then closed with a vote of thanks to the Chairman.

#### CLOGAU COMPANY.

The ordinary annual meeting of shareholders was held, on Thursday, at the Cannon-street Hotel. The report stated that the directors were glad to be able to show a better state of things than at the last general meeting. You were then told that all the capital had been spent in works and trials, and that it had been proved that the poor ore would not pay the cost of tramming to the works and its subsequent treatment, and that the only chance of the mine becoming profitable would be in confining the operations to the treatment of the rich ore only. Also that the Vigna adit had been completed to the extent required by the Crown, but that no copper had been found, and that, therefore, all operations there should be discontinued.

The result of the meeting was the raising of 1050l. additional debentures upon the conditions named by you, the chief of which were that they should take priority before shareholders in the distributions of assets in case of liquidation, that a bonus of five shares fully paid up should be given for each debenture of 10l. It was some time before these debentures were allotted, as it was found requisite to rectify an oversight which had made the debenture-holders take priority over ordinary creditors, in case of liquidation, whereas the intention had been the contrary. Delay was also caused by your directors having to make fresh arrangements with the Crown, so that the Vigna sett could be abandoned.

The new arrangements made are that the company take the Clogau Mine only at a minimum rent of 25l., merging in a royalty of 1-15th, which was reduced last year to 1-20th, which last royalty it is hoped will be continued by annually memorializing the Crown until the shareholders have been recouped their capital expenditure. The results of the past year's workings have proved that the treatment of rich ore only is the proper one for this mine, as it has led to our making a profit on the working as heretofore shown, which profit, however, has been absorbed in reducing the liabilities of the company. You will notice in the manager's report that he now strongly recommends the sale of the machinery at the first favourable opportunity. Your directors concur with him, and only regret that so much money has been wasted in futile attempts to extract gold from the poor ore. In erecting the machinery, &c., and making the trials the directors were acting only in accordance with the views of the shareholders in which your directors fully concurred, as it was felt that nothing but an exhaustive trial would have been convincing.

You will see by the account that only 420l. of the 1050l. of debentures subscribed has been called up, and it is hoped no further call will be necessary. The debts of the company are now very much reduced, and your directors hope that the result of this year's working will have the effect of still improving the position of the company. The accounts now presented commenced on July 1, 1877, and are brought down to Dec. 31, 1878. You will observe that in the balance-sheet no sum is put down for the value of the mine, as in its present position it is utterly impossible for your directors to make any correct estimate. During the first few months of the period over which your accounts extend heavy expenses were incurred in completing the Vigna adit and in making further experiments in treating the poor ores, and it was only, therefore, from Jan. 1, 1877, that it was commenced to work the mine in the manner recommended. The results of the working since that date, without taking interest on debentures into account, are as follows:—Gold returns, 2248l. 15s. 9d.; cost, 1529l. 6s. 5d.; profit, 719l. 10s. 4d.

#### FULLER'S REEF GOLD MINING COMPANY.

At the ordinary general meeting of shareholders, to be held on Tuesday next, the directors will report that during the past year there has been a suspension of work on the property, and during this period the mines have been duly registered as non-working. Several of the shareholders having evinced an increased interest in the affairs of the company, and having subscribed for debentures, the directors have engaged and appointed as mining engineer and manager Mr. F. Fowler, M.I.C.E., a gentleman of large experience in mining matters, and of whose efficiency and responsibility they have fully satisfied themselves. Mr. Fowler left England on Oct. 31, with instructions to fully explore and inspect the whole of the mining property of the company, and to telegraph the directors the result; this intelligence they anticipate will soon arrive, and be followed by an exhaustive and careful report on which the shareholders may with perfect confidence rely. On the arrival of this report copies will be at once sent to the shareholders, and a meeting convened.

In consequence of the resignation of the agents in Sydney, the directors have instructed Mr. Fowler to correspond direct with and receive his instructions from the London office; and, if the work should be resumed, to forward all accounts, with vouchers, pay-sheets, &c., to London. Mr. Fowler, before leaving England, thoroughly examined the machinery now in London belonging to the company, and has expressed his approval of it; this machinery the directors hope ultimately to forward to the mines. The directors are in communication with a gentleman who has for many years held a high official and responsible position in the Colonial Government in Sydney, who is willing on reasonable terms to arrange for the sale of the gold to the mine, and who will transmit full details of the transactions to England. The directors, in concluding their report, are confident that should the further development of the mines be recommended by Mr. Fowler, and carried out under his experienced management, the result will be very favourable to the prospects of the company.

#### RICHMOND CONSOLIDATED MINING COMPANY.

The subjoined report has been issued by the directors in announcing the dividend from the balance of last year's profits:—

The directors have this day declared a dividend of 10s. per share, free of income tax, payable on and after Tuesday, Feb. 4, at the company's bankers, the Union Bank of London, Princes-street, E.C.

The Transfer-books will be closed from Jan. 30 to Feb. 3, both days inclusive, and the dividend warrants will be posted on the 3rd.

It will be satisfactory to the shareholders to know that this dividend will be paid out of the profits made last year. Mr. Meyer's accounts to Dec. 1, 1878, show that he had at that date cash and bullion in hand of the net value of £252,000 50s. 400l., of which 19,000l. was in cash and the remainder in bullion in course of realization; this was the balance in favour of the company—exclusive of the bullion retained as working stock in the refinery of the value of about 7000l.—after paying a large portion of the cost of reconstructing the furnaces, furnace-house, and other things destroyed by the fire.

The shareholders will, therefore, perceive that there is enough profit remaining from last year's working to pay also the debentures falling due in March.

Two new furnaces were started on Dec. 16, and although the returns from these up to the present time are not so high as those of last year, it should be remembered that the old furnaces, after many improvements made during a period of seven years, were only capable of smelting 50 tons per day; while the new furnaces, although so recently lighted up, are already smelting that quantity daily, and it is anticipated that in a short time they will smelt up to their full capacity—from 60 to 70 tons a day. The returns at first were affected by an accident to the large "Baker" blower, and subsequently by two furnaces having been temporarily choked.

The refinery was started on Dec. 30, and is working steadily and well, turning out gold and silver of the value of 300,000 (Eureka assay) weekly.

Explorations in the mine have been carried out vigorously since the furnaces were shut down in August, and large bodies of ore opened up. The air compressor, with four Burtchell drills, is working well, enabling explorations to be carried on with much greater rapidity. Mr. Rickard, writing on Dec. 4, says:—"That you may understand more thoroughly the present developments made in the ore body on and about the 500 ft. level I got Mr. Wescott to make two sections of the ore body, showing its thickness and extent generally, according to

these dimensions, which I find to be 100 ft. by 130 ft. by 60 ft., or equal to 780,000 cubic feet; by allowing one-third of this for low grade ore and possible 'horres' will leave 520,000 (cubic feet), and allowing 15 cubic feet to the ton would amount to something over 34,000 tons, it is impossible to say how much ore there is in this ore body, as you are aware how difficult it is to estimate; but I should say we have in the mine to-day ore enough available to run the furnaces for one year without interruption, and in taking away this there will no doubt be developed as large bodies."

In the same letter, speaking of the cross-cut from the 600 ft. drift west, he says:—"The ground around the place where I started the cross-cut shows signs of ore, and in the cross-cut we found some very nice stones of galena and carbonates; the ground is very similar to the cross-cut in the 400 which was driven into and opened No. 7 chamber;" and, again, "the 900 is entering broken ground, and we hope soon to have ore."

Writing on Jan. 2 he says—"No. 11 chamber is opening out very well, and shows a large body of ore; No. 12 (chamber) was not in good ore when we began to stop, but at present it is in good ore." "The 1000 ft. level has been drifted 18 ft. 12 in. westerly direction on the quartzite; the present end shows very good indications for ore."

It will be remembered that in August last the members of the late committee, then sitting on the board, employed Messrs. John Taylor and Sons to report on the working of the mine through one of their confidential agents, Capt. Tonkin, whom they sent out to Eureka for that purpose, returned to England about the end of December. The directors have, however, only received from Messrs. Taylor and Sons their observations on Capt. Tonkin's report since this circular was in type, and they, consequently, have had as yet no opportunity of examining them; but, from the perusal they have made of the report itself, they observe that Capt. Tonkin estimates the reserves of the mine at only 12,000 tons of ore, however, he gives neither measurement of the size of the ore bodies, nor the number of cubic feet to the ton, by which his figures may be checked, and Mr. Rickard, writing on the very same day from Eureka, gives these necessary data, and estimates the reserves at over three times that amount, the directors consider that the estimates of the latter are far more reliable, especially as he thoroughly understands the mine, and has never been in the habit of making exaggerated statements. HUBERT AKERS, Secretary.

#### THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week the usual fortnightly settlement intervening has restricted business. Particulars of the continuation business done are given below. The new account for settlement Feb. 13 opens with a much better feeling, and a slight increase of business. With nothing unfavourable politically, money at low rates, and a subsidence of the recent disquieting commercial rumours, it would appear that the prospects of some improvement in trade are more hopeful. Many investment securities still obtainable at low prices, owing to exceptional circumstances, must pay those well who lay out their money judiciously at a time like the present.

In shares of coal and iron companies, Bolckow, Vaughan (A) have advanced 1/2 per share, Ebbw Vale 5s., and Glasgow Port Washington 2s. 6d., while Chillingworth are 2s. 6d. lower. Benhar fell to 8s.—a low price for a 10l. share—but their prospects are now viewed more hopefully, and they have advanced to 15s., 20s. The general feeling is that they will manage to raise sufficient money to keep this concern going, when the shares are bound to rise a great deal. The report of the Rhymer Company for the past half year shows the effect of the disastrous state of the iron trade, and once prosperous company. They have, however, strengthened the board of directors by the addition of Sir Henry Tyler, and are developing their powers of producing steel as far as the outlay is within their power. They are getting a good many orders for steel rails, which, so far, more encouraging. Andrew Knowles and Sons are at 8 1/2s. Ashbury (new) 50s. 6d. Bolckow, Vaughan, A, 53; ditto, B, 29 1/2. Cardiff and Swansea, 22s. 6d. Chapel House, 40s. to 50s. Chillingworth, 40s. to 45s. 6d. Charles Cammell and Co., 15 1/2s. Darlington debentures, A, 12 1/2s. Ebbw Vale, 4 to 5. Great Western, 40s.; ditto (pref.), 50s. John Brown and Co., 22s. Mersey, 40s. ditto. Munz's Metal, 52s. 6d. prem. Nant-y-Glo and Blaenau (pref.), 18 to 19. Newport Abercrombie, 50s. New Sharlston (pref.), 70s. Merbudda, 18s. Parkgate, 25 1/2s. Pilsell, 10 1/2s. ditto. Rotherham, Holmes, and Mashro, 5; ditto (pref.), 6 1/2s. Sandwell, 14. Staveley, C, 60 1/2s. South Wales, 60s. Tredgare, A, 14.

In shares of foreign copper companies, Tharsis are 5s. lower, having declined 2 1/2s. and 1 1/2s. the week. English and Australian are at 22s. 6d. Rio Tinto 5 per cent., 58 1/2s.

Home mines are still dull. The sale of the Glasgow Caradon Company on the 23rd inst., being the first for the current financial year—computed 198 tons of copper—realized 3655l. 11s., or an average of 70s. 11d. per ton. Last month's sale was 200 tons at 75s. 4d.; while the sale in the month of January for some years back have been:—In 1873, 200 tons at 65s. 1d.; in 1877, 240 tons at 65s. 1d.; in 1876, 240 tons at 110s. 10d.; in 1875, 240 tons at 113s. 7d.; and in 1874, 250 tons at 67s. 6d. It is said the Killfrith report, to be issued soon, will be fairly favourable. Bampfyde are at 5s. East Van, 24s. to 25s. East Roman Gravel, 15s. to 20s. Great Lacey, 10 to 15s. Llanrwst, 13s. to 25s. St. Patrick, 10s. South De Eresby, 20s. Van Consois, 12s.

In shares of gold and silver mines, Richmonds were sold early in the week at 9 1/2s., a reduction of 1/2s. 6d., since they were improved on the dividend of 10s. per share, payable Feb. 13. This week's run is 50,000. The profit of St. John del Rey in December—8200l.—is an increase both on October and November, perhaps due to the additional stamping power. The increase will require to continue, or they will not be able to maintain the 30 per cent. dividend, besides paying the new unjust Brazilian tax of 4 per cent. on profits. The low price of Port Phillip shares is somewhat explained by the report, as it appears 3000 ozs. less gold was obtained than in the preceding year. Besides, after the dividend is paid the balance to carry forward is only 28l., while the year's profits had been assisted by a balance of larger amount brought in, so that next year more gold will have to be obtained or a smaller dividend paid. The produce of Don Pedro for the first division of January is 15,000 ozs. Almada and Tiritio has received advices of a remittance of 38500 in ore and bullion. The weather at Sierra Buttes continues unfavourable. The following profits are announced for November:—Antioquia, 50l.; Frontino and Bolivia, 43l.; and Tolima, 1798l. gross. The meeting of Fuller's Reef will be on Feb. 4. Chicago, 10s. to 20s. Colorado, 30s. Eberhardt, 75s. Emma, 3s. 6d. Exchequer, 4s. Flagstaff, 5s. Rora Grande, 1s. 6d. South Aurora, 2s. 6d. to 5s. Victoria (London), 7s. 6d.

In shares of oil companies, Uphall has advanced 5s., while Dalmeny are reduced 3s., also Oakbank and Young's Paraffin 2s. 6d. Young's Paraffin shares have been steady, from 14 to 13 1/2s. this week. Runcorn Soap are higher at 8 1/2s. 4d., at which price they would yield 3 1/2 per cent. Prices of candles shares 10. In shares of miscellaneous companies there is little doing. Liverpool Rubber shares steady at 4 1/2s., at which price they will yield 7 1/2 per cent. Milner's Safe is at 7 1/2s. Native Guano, 60s. Neufchatel Asphalt, 5s. to 7s. Phospho-Guano, 7 1/2s. to 7 3/4s. Wagon companies shares are firmer, excepting an odd lot of Scottish sold at 8 1/2s. The Railway Rolling Stock Company's dividend for the half-year will be 4 per cent., and that of the Union Rolling Stock 10 per cent. for ordinary shares, and 6 per cent. on the preference. Prices of other shares—Birmingham, 14s. British (third issue), 5s. prem.; Bristol and South Wales, 6 1/2s.; Gloucester, 7 1/2s.; Metropolitan, 40s. prem.; Railway Carriage, 80s.; and Swansea, 40s. In chemical companies shares, Newcastle is flat on rumours of a call. Law's steady at 8 1/2s. Langdale firmer, at 95s. to 100s.

BENHAR COAL COMPANY (LIMITED).—Notice has been issued of an extraordinary meeting of this company, to be held on Feb. 5. The business will be taken up from the last meeting, and, if resolved, new directors will be elected. The notice adds that shareholders who are not disposed to take up the new preference stock could give effectual service to the company by taking up some of the overdue debentures. These debentures are in sums of 100l. and upwards, and bear 5 per cent. interest.

On Contango-day (Monday) the following were the rates of continuation current:—Contango: 14. 2d. on Benhar; 14. on Glasgow Caradon; 6d., 1s. 9d., on Richmond; 9d. on Tharsis; 9d. on Uphall Oil. Backwardation: 9d. on Young's Paraffin. On comparing the making up prices fixed to day for the shares named with those for the same shares at previous settlement, the variations thus shown have occurred during the account are:—Young's Paraffin has advanced 7s. 6d. per share, Tharsis (new), 5s.; Uphall Oil, 2s. 6d.; and Oakbank Oil, 1s. On the other hand, Richmond have fallen 15s.; Benhar, 9s.; and Marbella, 5s. The others are unaltered. Glasgow Caradon, Glasgow Port Washington, Huntington, Monkland, and Tharsis.

WEST MARY ANN MINE.—This young property is considered a very promising one, and adjoins the old Wheal Mary Ann, which paid such enormous dividends for a number of years, and is under the same management. With a moderate expenditure they have already a lode 15 fms. under the adit, which is of excellent character. In the shaft from surface they have only about 14 fms. more to sink and rise when they shall have hauled, and they can at once open out on the lode below. In about two months they expect to be working on the lode again. At last meeting it was resolved to purchase an engine to erect on the mine, and sink a shaft from surface. The adit level has been extended north 35 fms. from the cross course on the principal lode discovered in the sett. A sink was made below the level 4 fms., and produced lead ore throughout its entire depth; the lode is from 3 to 4 feet wide in the winze below adit, and looking its best at bottom. The indications are that good deposits of silver lead are not far off. The assays produce 55 1/2 and 77 1/2 ozs. of silver to the ton of lead, and 15 1/2 in 20 for lead, which are very good. The monthly costs are small, and the last call, in October, was only 2s. 6d. per share. The shares are very well held, and no calls in arrears. The mine is in 3000 shares, on which 15s. each has been paid.

CWM BRYNWO LEAD MINING COMPANY (LIMITED).—This mine continues to open out in a very satisfactory manner, and it is expected a good dividend will be paid in June. The property has always returned lead, and must continue to do so in depth, as the greatest and best courses of ore yet discovered in the county of Cardigan are considerably below the bottom level of Cwm Brynwo. As was mentioned last week, the mines lie between those great and rich mines Bish Consols and Goginan. The Frongoch, again, is two miles to the south. The lead ore got from the 92 gives 4 tons to the fathom, and there is stated to be plenty in sight for extensive working. There is no mine in Wales possessing greater natural advantages for working than this one, and it is thus bound to pay well. The shares are at 21. each (fully paid).

GLASGOW CARADON CONSOLIDATED COPPER MINING COMPANY (LIMITED).—The nineteenth annual report and accounts of this company for the meeting on Feb. 3 state that the sales of copper ore for the year were 2562 tons, realising 9848l., at a profit of 755l. In the previous year 2336 tons realised 11,427l., and 1162l. profit. This decrease in profits is ascribed to it having become prudent, owing to the increased depression in the copper trade, to restrict the output, so as to preserve the property for better times. Many parts of the mine from which ore could be profitably raised in ordinary times have to be left alone at present. The working expenses are 5684l. this year, against 5929l. last year, but this reduction is only nominal, for,

compared to the ore proceeds, the costs are actually higher this year. This is not satisfactory. The bills receivable are 9717l., against 7352l. last year. No dividend is recommended, and the balance to be carried forward so as to strengthen the financial position of the company, and enable them to take more advantage of better prices, when these are obtainable. Should trade, however, revive in the current year they promise an interim dividend. The agents' report states that the price of ore has averaged fully 10s. 6d. per ton lower for the same quality this year than last. The most promising part of the mine is the 102 ft. level. They have a good deal of ore ground laid open, and from which they purpose making about the same returns to commence the year. An increase of returns will depend a great deal upon the opening of the 90, and deeper levels, as well as the price of ore.

PHOSPHO-GUANO COMPANY (LIMITED).—At the meeting of this company to-day a dividend of 3s. 6d. per share will be declared, making, with the interim of 7s. paid in July last, a total dividend of 7 1/2 per cent. for the year, comparing with 12 1/2 per cent. for the previous year. The profits were 10,062l., and the balances brought in and carried forward respectively 14,826l. and 3299l. The decrease in profits is owing to the high price of ammonia, together with the increasing competition of Peruvian guano and low class French manures. The directors have exerted themselves with all caution, owing to the bank failures, in developing the home trade, and hope increased sales will result next season.

SCOTTISH WAGON COMPANY (LIMITED).—The report to the 34th meeting of this company for the half-year ended Dec. 31 last states 929 wagons have been added to stock at a cost of 40,793l. On the other side 225 wagons have been sold out of stock to lessees on terms of agreements. The total number of wagons now running is 14,367. The net balance of revenue account is 6890l., from which a dividend of 5 per cent. is recommended, leaving 590l. to add to the reserve fund, and raising it to 7605l. The directors have had to restrict their operations, and so earn less profits, owing to the depression of the coal and iron trades. At the same time, the higher rates of interest required on the loan capital has been against them. With an improved condition of the industries of the country they promise better results.

J. GRANT MACLEARN, Stock and Share Broker. Post Office Buildings, Stirling, January 30.

#### MINING ECHOES, AND MINING MATTERS.

The composition offered by Messrs. Tweedy and Co., and accepted by their creditors, has been one of the events of the week. The dividend is certainly greater in amount than was generally expected, many having placed it as low as 10s., whilst even the most sanguine scarcely appear to have looked for more than 15s.; but with the extra 1s. offered by Lady Williams, 17s. in the pound is, all things considered, a satisfactory one to what at first blush promised to be a very distressing affair to the depositors. We sincerely hope the realisation of the assets will show that too high an estimate has been placed upon their value. There is more reason to hope for punctual payments of the dividends as they fall due, since the nature of the assets has been enquired into by a thoroughly independent London accountant of standing, who personally recommended the acceptance of the composition offered; yet we are bound to say that to many to whom the names of the partners of the Cornish Bank have for years past been "as familiar as household words" it seems strange that if the assets are undoubtedly of the value for which they are set out in the published balance sheet no assistance was forthcoming. The London agents appear to have been fully covered, for it is said they have not even proved the debt. Why, then, did they decide to give no assistance? And what caused the many influential and wealthy friends of the Cornish Bank to turn deaf ears to the request for help? The Messrs. Tweedy enjoyed the great advantage of being the partners in the third generation in a very old established concern, enjoying an extended confidence, which was not confined to "the county," and possessed apparently good assets representing 4,000,000l., yet amongst all their connection no assistance was forthcoming. Such appears to be the fact. No one could be found either as partner or otherwise to help to tide over the present crisis, and by one of the most injudicious circulars ever issued by a banking firm. Perhaps the solution of the puzzling problem lies in the issue of this very circular. What was intended to allay fear, and to enable the firm to gain time whereby some good partner might have been introduced, or some substantial help negotiated, so precipitated the crisis that no time was left to arrange anything, and money not being forthcoming when the "run" had so reduced the cash on hand that only about 6000l. remained in the head office and branches there was no alternative but to close the doors. This may possibly be a solution, but it is not a satisfactory one.

Herodsfoot Silver Lead Mine, after having paid in dividends nearly 60,000l. upon a capital of some 8000l., has been sold for a trifle over 2000l. And why? Because the body of adventurers were either so wanting in heart or means that they were daunted by the necessity of raising 2000l. to continue the sinking of their mine. We are not one of those who believe that Herodsfoot is "worked out." On the contrary, if the present proprietors develop it with energy, and bring to bear all the latest aids of modern mining, the old adventurers may yet be heartily sorry that they sold the old bad for a mere 2000l. It is efficiently equipped with machinery, plant, &c., and produces silver-lead of a high quality. The new company is in 3000 shares, upon which 11. per share has been called up, so that the mine will be a sure in hand towards the necessary cost to be incurred in sinking deeper. By a strange chance the new office is the same from which the mine, faithless to its originators, wandered a rising affair, many years ago. It acquired its riches under other management, and now in its old age returns to its first friends. We hope it will do all for them in the future what it has done for its late adventurers in the past.

At the meeting of the West Chiverton adventurers, on Thursday last, a call—quite expected—of 31. 5s. per share was made. This call was rendered necessary not only by the mine having failed to pay its way but from the fact of the account with the defunct Cornish Bank having been overdrawn upwards of 8000l. And the liquidators having demanded the settlement of the account, and it having been found impracticable to transfer it to other bankers (query, why? Other bankers have taken over mine accounts since the failure involving a greater overdraft than this, and West Chiverton is an unlimited, or rather cost-book company, and possesses an excellent constituency) a heavy call has for days past been anticipated. The shares have been forced down as low as 5s.—indeed, for "forward delivery" they have been speculatively offered on the open market at the magnificent sum of one half-penny each. The desire to "get out" exhibited in some quarters has been undoubtedly a great element in causing the fall, for with the late lamentable examples of unlimited liability before their eyes a few country shareholders appear to have desired to be quit of their shares on the best terms that could be made. We hope to return to the subject of this mine next week.

A very interesting memoir\* upon Cornish Tin Dressing has appeared in the fifth livraison of the *Annales des Mines*, a French official bi-monthly magazine. The paper should be read by all practical men connected with tin mining, for it is one of the best that has yet been published on English tin dressing. M. Carcanagues, in some quarters visited and narrowly inspected the dressing floors of several mines, notably Dolcoath, East Pool (or Eastpool, as it is styled), Carn Brea, Tincroft, West Basset, West Seton, and South Condurrow. In 1857, M. Moissenet published a very complete essay on Cornish Tin Dressing; but, as M. Carcanagues remarks, since that period numerous changes have taken place, changes which have greatly modified the process then in vogue. One of the principal necessities of this modification has been, says our author, the introduction on the English market of Australian tin. There is no doubt that competition, with its natural result—lower prices—has obliged our Cornish mine managers to learn some useful lessons in the science of mining and dressing; and in the successful production of drills and other mechanical appliances, which have taken the place of manual labour, we see the effect of this competition.

And we have no reason to be dissatisfied with the lessons learnt. Cornwall has at last emerged from a long period of prejudice for old-fashioned methods, and therefore the introduction of Australian tin may turn out hereafter to have been an unmitigated boon to the Cornish tin mining industry. It is something to say even now that tin can be produced at a cost of less than 35s. per ton—a price which a few years since would have seemed almost impossible, even taking into account the heavy costs of materials and wages. Let our managers complete the lessons they have been, and are still, learning, and we may see tin produced even at a still lower cost. Is it too much to hope that the next generation of managers may have undergone a thoroughly scientific training, and not be merely the possessors of self-taught knowledge? Theory will then help practice, and some future genius may arise from amongst them to carry scientific mining to greater perfection. To return to M. Carcanagues. The formula of preparation is treated under five general heads, and after minutely describing the several processes and all the machinery and appliances used in connection therewith, and giving as a principal in some quarters visited and narrowly inspected the dressing floors of several mines, notably Dolcoath, East Pool (or Eastpool, as it is styled), Carn Brea, Tincroft, West Basset, West Seton, and South Condurrow. In 1857, M. Moissenet published a very complete essay on Cornish Tin Dressing; but, as M. Carcanagues remarks, since that period numerous changes have taken place, changes which have greatly modified the process then in vogue. One of the principal necessities of this modification has been, says our author, the introduction on the English market of Australian tin. There is no doubt that competition, with its natural result—lower prices—has obliged our Cornish mine managers to learn some useful lessons in the science of mining and dressing; and in the successful production of drills and other mechanical appliances, which have taken the place of manual labour, we see the effect of this competition.

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\* *Memoire sur la Préparation Mécanique d'Etain dans le Cornwall*, par M. Carcanagues. † Dressing-floors.

CORNISH PUMPING ENGINES.—The number of pumping-engines reported for September to December is 16. They have consumed 5728 tons of coal, and lifted 423 million tons of water 10 fms. high. The average duty of the whole is, therefore, 49,600,000 lbs. lifted 1 ft. high, by the consumption of 112 lbs. of coal. The following engines have exceeded the average duty:—

West Wheel Franco—88 in. ....	Millions	53.5
West Wheel Seton—Harvey's 85 in. ....		70
West Wheel Seton—Rule's 70 in. ....		70.6

## WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS,  
MINEOWNERS, STOCK AND SHARE DEALERS, &c.  
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

Ten years ago the weekly information which had previously been published for a great number of years in *WATSON BROTHERS' Mining Circular* was transferred to the columns of the *Mining Journal*, with the following announcement; which is now reproduced in consequence of the numerous letters and enquiries handed to them of late in reply to one which appeared in the *Journal* on the Clementina Mine.

In the year 1843, when mining was almost unknown to the general public attention was first called to its advantages, when properly conducted, in the "Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. WATSON, F.R.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring the success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and sharedealing than there is at present; and from the lengthened experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to recommend mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, and they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mines, and of the financial and real position of mining companies generally, have induced Messrs. WATSON BROTHERS to make their Circular now published in the *Mining Journal* more extensively known, and to state—

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to Four o'clock.

They also buy and sell shares for immediate cash or for the usual fortnightly settlement in all Mines dealt in on the Mining and Stock Exchanges, at the close market prices of the day, free of all charges for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in upon the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £2 2s.

**RICHMOND.**—Will our correspondent send us the last statement of accounts to which he refers. We are given to understand that the costs are £2,000, a month, or over 260,000, a year, while Capt. Tonkin, who was sent over to inspect the mine through the recommendation of Messrs. John Taylor and Sons, values the reserves at only 12,000 tons, and the price seems to have dropped to 10s. per ton. In the face of this a dividend of 27,000, is declared! In reference to Captain Tonkin, that gentleman was sent out by the late directors to report upon the property, for the information of the shareholders generally. He has been back at least six weeks, and has received, it is said, 6000, for his report. And why has it not been sent out to the shareholders? Its publication would at least set at rest the various rumours afloat. The information derived from men who had worked in the mine, and upon which was founded some remarks a few weeks ago, was to the effect that the ore was deteriorating both in quantity and quality in depth, and that it was being "worked up to the hilt." The reports of the company's agent seem to indicate the former; and Captain Tonkin values the reserves at about 12 weeks' consumption of the furnaces!

During the latter part of last year there was a very heavy expenditure, without any return, in rebuilding and reconstructing furnaces, and the ore accumulated to a large extent in the mine. Upon these accumulations, we presume, the furnaces are now chiefly at work, yielding, if we are right in our calculations, about 1000, per week profit. The return just published for the week ending Jan. 28 is 1000 tons, \$50,000, or 10s. per ton. The produce of refinery, \$30,000.

Parys Mountain, Morfa Du, and other matters next week.

**MR. WILLIAM H. H. WATSON** having had some years' experience in Practical Engineering and Mining in Cornwall, as well as two years' practice in the London Stock and Share Markets, begs to offer his advice and services to Shareholders and Intending Investors in Mines, and in the Purchase and Sale of Shares.

Address: W. H. H. WATSON, 1, ST. MICHAEL'S ALLEY,  
CORNHILL, LONDON, E.C.

## THE WEEK.

**SATURDAY, JAN. 25.**—The anticipated rise in Atlantic and Great Western Rail way, to which reference was made, a fortnight ago, made good progress to-day. The first mortgage, from being 28½, rose to 32½, the second advancing from 10 to 12. Don Pedro shares fell to 18s., and Richmond to 9½. Eberhardt in demand at 2½, and Port Phillip at 12s. Turkish Fives are now down to 11, Egyptian Unified to 48½, and the Preference to 70. Dover, A, closed dull at 116½; there is 6 to come off here on account of dividend.

**MONDAY.**—The recent firmness of Brighton, A, vanished on the approach of the settlement, this being the last day of the present account. The price fell from 118½ to 116½, and now shows a fall of 10s. since last carrying over day. Dover, A, declined to 116. Great Eastern to 50, and the railway department was altogether flat and lifeless. Unified at one time touched 48, but the closing was at 40. Richmonds were in some demand, on expectation of a better return. Don Pedro shares declined to 18s. Parys Mountain were wanted at 6s. and over.

**TUESDAY.**—Brighton, A, was continued to-day at 115½, and Dover, A, at 115½. A fortnight ago the prices were 126½ and 121½ respectively. On the other hand, Berwick have improved from 134 to 137½, and Erie (Second) from 75½ to 83, the bonds of the latter being of 2000. value. It follows that a holder of only 10 has found a difference of over 2000, in his favour. Richmond rose from 9½ to 10½. The week's return has improved to \$50,000. It is expected that the quarterly dividend will soon be announced.

**WEDNESDAY.**—The markets showed a firmer tendency than for some time past. Turkish Fives rose ½, to 11½, the 60 issue ½, and the Treasury bonds 1½. The headlong fall in Brighton, A, and Dover, A, was at length arrested, but neither closed at the best point reached. Brighton, A, was run up from 114 to 116, closing at 114½. Dover, A, closed at 116½, after touching 117. Alamillos, 1½ to 1½; Van, 16 to 17; Eberhardt, 3½ to 4; Devon Consols, 1½ to 1½; Parys Mountain, 5s. to 7s. 6d.; Don Pedro, ¼ to ½; Last Chance, ¾ to ¾; Emma, 3s. to 4s.

**THURSDAY.**—The Richmond directors have declared another quarterly dividend of 10s. per share, payable on Feb. 4. It is announced that the dividend will be paid out of profits made last year, and that there is enough profit remaining to pay the debentures falling due in March. It is a matter for congratulation that the old steady dividend-paying Herodfoot Mine has at length fallen into strong hands, who are determined on making it once more a success. The shares were all immediately subscribed for, and now stand much higher. The Bank Rate was reduced to 3 per cent., which had a favourable effect on the markets.

**FRIDAY (Opening).**—At the West Chiverton meeting, yesterday, the call made was one of 3s. 5s. per share. The shares are nominally quoted this morning 3s. to 3½. The North Eastern dividend is announced as 7 per cent., which is considered very satisfactory. The stock has risen 1½. Dover, A, has advanced to 118, and Brighton, A, to 109, ex div. Richmond, 9½ to 9½; Don Pedro, ¼ to ½; Port Phillip, ½ to ½, cum div.; Parys Mountain, ¼ to ¾; Morfa Du, ¾ to ¾; Last Chance, 6s. to 8s.—Two o'clock.—The markets are easier. North Eastern have been 138½, now 137½ to 138. Dover, A, have receded to 116½; and Great Eastern to 51, being a fall of ½ of the day. Turkish Fives, after touching 12½, are now 12½. Eberhardt, 3½ to 3½.—Four o'clock.—Railways recovered, but foreign bonds closed dull. Grand Trunk (first and second) left off weak. Diamond Rock, 1½ to 1½; General Credit, 5½; Milner's Safe, 7½ to 8; Chapel House Colliery, 2½ to 3; Newport Abercrombie, 3½ to 4; Blison and Crump, 2 to 3; Altamont, 3½ to 4.

FERDINAND B. KIRK.

**ASSURANCE SHARES.**—At a sale by auction of 435 shares in several assurance offices, held at the Mart, by Messrs. Glasier and Sons, 200 shares of 1000, each (21, 10s. paid) in the Law Fire Insurance Society made upon an average 12s. 12s. 6d. per share; 40 shares of 1000, each (10s. paid) in the Imperial Life Office sold for 21, 18s. 9d. per share; 105 shares of 500, each (8s. paid) in the Legal and General Life Assurance Society fetched 12s. 2s. 6d. per share; and 90 shares of 1000, each (11s. paid) in the Universal Life Assurance Society realised 40s. 2s. 6d. per share.

**THE NEW SOMBRERO PHOSPHATE COMPANY (Limited).**—Mr Henry Palfrey Stephenson, of St. Mary Axe, and Mr. Horace Brooks Marshall, of Fleet-street, London, are to be appointed liquidators of this company. The remuneration is to be 5000.

## Mining Correspondence.

## BRITISH MINES.

**ABERLYN.**—John Roberts, Jan. 28: Since the last monthly report we have communicated the deep adit with the No. 2. After raising 3 fms. in the rise, and sinking 1½ fm. in the bottom of the No. 2 to meet the rise. Before we could sink to meet the rise we had to drive 4 ft. south. The plan which I sent you two or three days ago will show you just exactly our position here. We are clearing away the waste stuff produced by driving this level south to meet the rise by throwing it down the rise to the deep level, and then tramping it out to the crusher. I expect that by Thursday we shall clear this level, and then we shall resume the driving north by one pair of men, and another pair we shall put to cut through the lode behind the end to meet the bottom of the winze from the No. 1 level, and then rise to meet the winze. We shall then have a large piece of blende ground laid open. We have sunk in the winze at No. 1 about 5 ft., and the lode looks well for blende. As you are aware, we are sinking on the hanging side, and carrying only about 4 ft. of the lode, which looks exceedingly well. On the surface we have completed all the excavations and levelings for the dressing floors, with the exception of making a conduit to go under the lower dressing-floors to take away the water from the wheel, by doing which will give us considerably more room for our round bunnies, and made a viaduct from the office to the upper dressing floors, giving us 25 ft. tip for the stuff. We have had all the machinery brought on the mine, and have had the greater part of it brought down to the spot for erection, which has been, during this frosty weather, a rather tedious job, as so much extra care is required. We have just commenced erecting the wheel, which, although second-hand, the millwright thinks he can make last for 20 years, and I hope in the next monthly report to be able to state that both the wheel and the crusher are complete. The weather has militated considerably against us. Had the weather been anyway favourable we should have had the mill and wheel both in place before this.

**BEDFORD UNITED.**—R. Goldworthy, Jan. 30: No lode has been taken down in the 150 east, driving being continued by the side of the lode with a view to reach as soon as possible the point where, judging from the ore sunk through in the shaft, we expect to find a good lode. The lode in the 138 east is worth 6s. per fathom, and promising for further improvement. The lode in the 127 east is worth 9s. per fathom. Three stopes in the back of the 138, and one in the back of the 108, are worth on an average 7s. 10s. per fathom.

**BETTS-Y-COED.**—H. T. Hairey, Jan. 29: The shallow adit level has been driven about 70 fathoms east of Fwly shaft; nearly the whole of this distance has been through a good lode, and as this end is near the boundary we have taken the men from there and put them to stop by the Fwly shaft, where the lode will produce fully 30 cwt. of rich soft lead per fathom. The deep adit end is disordered at present by some cross-branches, but from its appearance will I think quickly improve. As the pumping wheel is again fixed by the frost there is no change to report in the 20. As soon as the weather moderates we shall commence to dress lead, being already; but until we get a change it will be useless to attempt it.

**BLAEN CAELAN UNITED.**—J. Pell, Jan. 29: Continuation of frost suspends all operations at these mines, but we have during the past week been lining the pumping-tubs and repairing the shaft, and so avoid delays later on when we recommence pumping and drawing.

**BLUE HILLS.**—S. Bennett, F. Bennett, Jan. 25: Judging from the appearance of the ground in the bottom of the Blue Burrow shaft, and from the fact of some capel containing tin making its appearance in the kilias, we think the lode is close by. The north lode in the 33 east end is 3 to 4 ft. wide, and worth 12s. per fathom. Two stopes above this level are worth on an average about 8s. per fathom.

**CARON.**—John Kitto, Jan. 27: The sinking of the new engine-shaft below the 10 has been somewhat delayed during the past month by the severe frost, and I am sorry to say all our underground operations below the adit level are entirely at a standstill. Since the date of my last report we have opened some fair paying ground in the 10, on the north part of the lode, sufficiently long for a new stope, and we believe this is standing whole to the adit. Our dressing operations have been almost entirely suspended for nearly the whole of the month, and cannot possibly be resumed until a thaw sets in. This I hope will soon take place, but at present there are no signs of it.

**CLEMENZA.**—T. Roberts, W. Sandoe, Jan. 28: The stope in the adit level is still producing good leadstuff, and every appearance of continuance. Surface operations are suspended.

**COMBARTIN.**—T. Harris, T. Comer, Jan. 28: We have to-day set the following bargains:—The adit cross cut to drive north, by six men, at 5s. per fm. We have just touched a new lode, which we have cut into about 2 ft., but we think there is more lode standing yet north, and so far as seen it is made up of veins of iron locking quartz, containing good spots of lead and mundle, and a little white iron, but we hope to see more of it in a day or two, when we will advise you of its appearance. The lode is embedded in a channel of kilias, the colour and texture being most favourable for the production of lead. The adit level to drive north-west on the counter lode, by six men, at 5s. 6s. per fathom the month. The lode is from 3 to 4 ft. wide, but at present it is disordered by a small cross course, but we hope the lode will improve again when we get away a little from its influence. The lode still shows good spots of lead and blende.

**T. Comer, Jan. 29:** We have cut through the new lode in the adit cross-cut, which is about 4 ft. wide, composed principally of quartz and kilias, with a little lead, blende, and mundle intermixed. The lode presents a very kindly appearance, and is embedded in a beautiful channel of ground, and I am of opinion it will produce lead to value if driven on. The lode in the north-west adit level is improved as we get away from the influence of the crossing. I will advise you of its appearance again to-morrow.

**COMBARTIN.**—J. Comer, Jan. 30: The counter lode in the adit level north-west is again producing some nice seams of lead and blende, and has every appearance of further improvement. Good progress is being made in driving the adit cross-cut north. The ground at present is principally kilias and small veins of capel, with faces of lead and mundle in the joints.

**CWMYSTWITH.**—Jan. 29: We are pleased to say that up to this date good progress has been made in driving the 15 fm. level cross-cut north, at Pugh's engine shaft, but this morning the water from the shaft (owing to the wheel being idle so long) reached the forebreast, and the men had to leave, and are now idle. In Gill's upper level cross-cut north the ground is a little more favourable for driving, and water issuing freely from the end, and we anticipate reaching the new lode in the time previously specified. In Mitchell's level, west of Mitchell's cross cut, on the north lode, the lode is 18 in. wide, composed of carbonate of lime, lead, blende, and copper ore. The lode in No. 1 winze, sinking below Gill's upper level, is 3 ft. wide, and worth 13s. 10s. of lead ore per fathom, the length of the winze, 9 ft. In No. 2 winze, sinking below Gill's upper level, on the new lode, the lode (viz., Mitchell's and new lode) are 12 ft. wide, composed chiefly of blende, with very nice solid lodes of lead ore embedded in the blende, as there are no signs of the lodes separating, but continuing in a large mass of blende for the whole width, 12 feet. We shall now leave the north lode stand, and sink on the footwall of the new lode, where the lode will produce 15 cwt. of lead ore per fathom. The two trial stopes over Mitchell's level, on new lode, are yielding 16 cwt. of lead ore per fathom, and ground easy for stoping. The lode in the s.s. over the level Fawr, on the copper lode, is producing 12 cwt. of lead ore per cubic fathom, and the lode opening out very wide eastward, now 15 feet wide. Our bottom pitches are producing on an average 18 cwt. of lead ore per fathom, two being under water at Kingside shaft; the water at this shaft is not in the adit level. Our water-wheels are still "clogging up" with ice, and cannot be set going before a thaw sets in. Samples of a small parcel of 10 tons of lead ore were sent out yesterday, for sale on Feb. 11.

**DE BROKE.**—J. Phillips, Jan. 29: The weather is still cold, but the wind is getting further south, and we are expecting a change. The wheels are still at a stand, and cannot be started until the ice in and over the river beds goes away to some extent.

**DERSBY CONSOLS.**—S. Roberts, W. Sandoe, Jan. 21: Monthly Report: We have driven in the end driving towards Coburn's lode during the past month about 2 fms., by six men; the ground has been very hard and spare, but now there are some signs of improvement, and we think that we shall make better progress this month. The end is letting out more water, and towards the bottom the ground is easier.

**DERSBY MOUNTAIN.**—J. Roberts, W. Sandoe, Jan. 28: The lode at No. 1 end has fair signs of improvement; the ground is a little easier, and in the lode there are good spots of lead and blende. We have started driving the No. 2 end to get under and under the sump in the bottom of No. 1; the lode is 2 ft. wide, with a little blende, but appears to be disordered by the east and west lode, which the end has just passed through. The rise at No. 3 is not so good for lead, but the lode is strong, and has a kindly appearance for making lead as any lode can have. The stope at No. 4 is producing nice ore stuff for the crusher, and we are thinking that we shall have a good piece of ore stuff to go down with on the north end of the stope as well as on the south. We are making fair progress with the new shaft, and there are nice occasional stones of lead in the lode, showing that the lode is of an ore-producing character. We are making fair progress with the clearing the choke in No. 5 adit; as this is very important, being the outlet of the mine, and occasionally heavy floods of water pass through it. We are very particular to make it sufficiently secure, so as to avoid any future mishaps, and consequently it takes more time than otherwise would do. Our surface operations have been suspended on account of the ice.

**DERWENT.**—John Morpeth, Jan. 27: Here-with you have setting the list for February:—The list contains estimates of the ore broken in January, and because of the heavy fall of stuff in Jeffries' shaft putting a stop for the present to drawing, &c., the only bargain we have as yet for February is the 74 fm. level west of Westgarth's going upon the middle vein towards Burnshield's hanging vein. This end at present is at the division of the high and low coal sills, and is poor. The value of all the other workings at the time of suspension were—Jeffries' Shaft, Middle Vein: The 95 by the side of vein as usual is without ore. The respective worth of the five stopes in the back is 15, 15, 14, 14, and 16 cwt. of ore per fm.; veins of between 5 and 6 ft. in width. The flats also over the same level on the south side of vein yield 14 cwt. of ore per fathom. Since the 93, west of Jeffries' shaft, was holed to the 93, east of Westgarth's, the stopes in the back of both levels are thoroughly ventilated from end to end, and can consequently be stoped at a more moderate price. The value of the stopes in the back of the former level is 15, 15, 17, and 10 cwt. of ore per fathom respectively: vein averaging over 4 ft. in width.—Sun Vein: The stope over the 70, west of shaft, is poor, and we had supposed stopping it and putting the men east of Westgarth's, where they could get far more ore. The 70 east yields 9 cwt. of ore per fathom, and the stope in the back 14 cwt. The men after having the 93, east of Westgarth's shaft, on the middle vein, were put to rise and stopes in the back of that level at 100s. per fathom, where the vein is worth 1 ton of ore per fathom. The reserves of ground over this level are now very large, and being available for stoping when pumping is resumed, and the water out, increased returns will be obtainable. The stope over the 74 west in the lower part is poor, but in the upper part it yields pretty well; its yield is 14 cwt. per fathom.—Surface: On the dressing floors, owing to the severe weather, there is a large accumulation of slime, &c., which when the movement of the weather will permit shall be dressed.

**EAST CLYDEBON.**—Richard Eustrey, Jan. 28: The following is my report of this mine. Since the last general meeting held on the mine the staff has chiefly been engaged in cutting ground in the engine-shaft and changing pitwork. We have not made such rapid progress in executing this work as I should like to have seen. The reason is we began rather late in the season, and the winter, which has been an unusually severe one, commenced rather early; therefore, the increase of water has been considerably more than our usual quantity, but I may here add that a part of this is owing to the water issuing from the lode at the 74 fm. level. Since the lode got rich for lead, which is worth at the present time 1½ ton per fathom, it has become more porous, which caused the water to in-

crease on the engine from one to two strokes per minute. Our new pitwork will now remedy this evil, and in a few days I hope to have the pitwork changed from top to bottom, when the sinking of the engine-shaft will be proceeded with to the 84 fm. level, and while this is being carried out we shall commence stopping the back of the 60 fm. level in the productive part of the lode already alluded to. We have not driven much ground in the 64 fm. level cross cut south since the last general meeting in consequence of the shaft being so wet. We were obliged to take this staff to assist the shaftmen at the capstan; also to put them on shorter cores or shafts. The greater part of this difficulty is now got over, and the men will resume the driving of the end with all possible dispatch. The lode in the 74 fm. level is looking exceedingly well, and previous to the next meeting we shall sell a parcel of lead about 15 tons; therefore, as our costs will not increase during that period I consider a call of 2s. 6d. per share will be quite sufficient to carry us on for the next four months. In the meantime I hope the shaft will be approaching pretty near the 80 fm. level, and should the lode prove so productive in that level as it is in the one above, and I see no reason to doubt it should not, we may safely calculate that the mine will be self-supporting with these two levels alone.

**EAST DARREN.**—Jan. 29: In the 104 cross-cut south, opposite Taylor's shaft, the ground is favourable for driving. In the 92, east of cross-cut, on south lode, the lode is 2 ft. wide, containing small branches of lead ore, but not sufficient to set a vein on. In the 92, east of cross-cut, on No. 2 branch, the lode 1½ yard wide, yielding 15 cwt. of lead ore per fathom. In the 80, west of cross-cut, on south lode, the lode is 4 ft. wide, composed of light blue clay-slate, carbonate of lime, stones of blende, and lead ore, yielding of the latter 1 ton per fathom, and looks kindly for further improvement. In the 80, west of cross-cut, on No. 2 branch, the lode is 2½ ft. wide, yielding occasionally good stones of lead ore. In the 74, west of cross-cut, the 30, east of cross-cut, on junction, the lode is 4 ft. wide, yielding 15 cwt. of lead ore per fathom. The stopes and pitches throughout the mine are without change to notice. The machinery is in good repair. Drawing and dressing at a standstill, in consequence of very severe frost.

**GAWTON COPPER.**—George Rowe, George Rowe, Jan. 25: All our operations in the mine are progressing in the usual way, without any particular change in the appearance or value of the lodes since our report for the general meeting. This very severe frost is against our surface work in preparing the ore for our next sampling in the coming week.

**GREAT LAXEY.**—F. Redcliffe, Jan. 28: Welsh shaft is sunk 7 ft. below the 247, but there is nothing fresh to be said of the lode in it. The 217 driving north of this shaft shows a little blende, but the end is still some fathoms off reaching the point where we expect it to produce ore to value. In the 235 south the end is scattered with small spots of blende, and is more promising than for some time past. In the same level north the lode in the end is increasing in size, and a little mixed with ore, but as it has not yet so completely tapped the water as to fully drain the ground above and in advance, we think there will perhaps still be a nip to pass through. The lode in the 220 end has been very rich, worth 80s. per fm., but during the last few days there has been a bar of ground in the end which cut off the ore; the end, however, seems to be nearly through it, and the ore is recovering. With regard to the winze and stopes in this part of the mine, upon the whole no very material change has taken place—a little increase in some making up for a slight decrease in the value of others.—Dumbell's: The 215 end north is worth 20s. per fathom; this level has been opening good ground, with small exceptions, for a considerable length, and speaks well for the deeper levels when they are reached. The next four levels are without change to notice. The 125 cross-cut has lately passed through a small branch, which may be the one we are in search of, but if so it is very small at the point of intersection. With the recent great improvement which has taken place in the level above we consider it will be right to resume the driving of the level north on its old course next month. The average value of the lode in the 110 end since last report has been 25s. to 30s. per fathom, but just now it is not quite so good. There is no other change in this part of the mine, and no change in the south ground. In the adit level north we are now driving a cross-cut for a few feet immediately behind the end, as it is uncertain whether the end is upon the strongest part of the lode.

**GREAT RETALLAOK.**—John Harris, Jan. 27: In driving through the lode, north from the boundary shaft, our men have holed into the old 30 fm. level, but the level not being driven on the footwall of the lode I have continued the men to cross out until we meet with it, on which we have found some of our best deposits of blende. The ground is very easy for driving through, and I hope we shall be able to reach it by the end of this week. The level we have driven in has passed through some nice seams of blende, and one in particular is 4 in. to 1 ft. wide, and will produce fully ½ ton of good blende per fathom.

**GREEN HURTH.**—William Vipond, Jan. 24: The ore in the sump has doubled in value the last two days, with more vein and ore still on the east side. I estimate that it has been yielding since Wednesday afternoon at the rate of 12 tons lead ore per fathom, and going down in the bottom fully as good. We have plate on the west side for the last 3 ft., and I expect a few feet more will bring us to the top of the limestone. The stope on No. 3 cross vein is yielding 10 cwt. of ore per fathom. Working going north on No. 3 still poor.

**GROGWINION.**—John Kitto, Jan. 28: The intermediate level on No. 4 lode and deep adit level on No. 3 have both opened out well during the past month, and are still yielding very good ore, but I will describe them more fully in my report for the half-yearly meeting of the shareholders, which must shortly be held. We are sinking a winze below the intermediate level, on No. 4 lode, which is also looking well, and the ground being all whole, both above and below, constitutes this a very important point. There is no other new feature in the mine since the date of my last report. The stopes continue much the same throughout, and all our underground operations have been carried on without interruption, but I am sorry to say our dressing operations have had to be entirely suspended on account of the severe frosty weather, but we have a large accumulation of good leadstuff in the mine.

**HINGTON DOWN.**—T. Richards, Jan. 30: Bailey's Shaft: In the 172 east the lode continues of a very promising character, containing capel, quartz, mundle, and copper ore, worth 5s. per fathom. In the 172 fathom level west the lode is of much the same character, consisting of capel, quartz, mundle, with stones of copper ore. In the stope in the back of the 172 east the lode will produce 6 tons of ore, or 16s. per fathom. In the 160, west of Nicholls' winze, there is no change. In the tributary stope and pitch, in the back of the 110, the lode is worth 6s. per fathom, and is very promising. In the deep adit the ground is favourable, and good progress is being made.

**LADYWELL.**—A. Waters, Jan. 30: No change in the new south shaft sinking below the 16. The 16, south of shaft, is in a sparry lode 3 ft. wide, and worth from 1½ to 2 tons of lead ore per fathom. The winze behind this end is opening tribute ground. The 32 south-west, on the New Britain lode, is going forward in a kindly-looking ground for ore. Dressing operations are quite at a standstill.

**LEAD ERA.**—J. A. Ede, Jan. 28: The adit is now extended north 10 fms. During the week the ground has changed from chert to a siliceous conglomerate, the tone of which is familiar to all used to these measures. The lode is wide, and the driving, its constituents, and the nature of the rock, are all the same as the ground forming the walls; I find a little carbonate of lime also coming in. I set the shaft ahead or north of adit forebreast yesterday to sink 10 fms. for 21s. As I informed you in my last, the object of this shaft is at least twofold—viz., to facilitate the driving of the adit, to prove the layers west of adit, and to be in a position to intersect any lodes that may be coming in, either from Minera or from the west, through the side of the adit. At No. 2 we yesterday resumed sinking; the ground at present is stiff, but in a few days we shall be through this ground into one easier to sink through, and closer connected with the bottom flat. We continue to find the flat strong and well developed throughout the property.

**LLANRWST.**—Robert Knapp, Jan. 30: I am glad to inform you that the improvement noticed in my last of the 14, east of Edean's shaft, still continues, and in favourable ground for progress. The winze sinking under the adit, now down 7 fms. in a good lode, is about 10 fms. in advance of the 14, so it is likely a good piece of ground is being opened up here. The lode in the adit end looks as if it will improve shortly. A depression is occurring in the footwall, and the probability is that an increase of lead will be the result. In the 14, west of Edean's, the lode is 4 ft. wide, of a very promising appearance, and is well exposed, but not yet to value. We have fixed a plat-solar at the diagonal shaft in the 14, and the shaftmen are now engaged in putting in the skip-road to draw from that level. This I expect will be completed to-morrow, when we shall at once commence a cross-cut towards the counter lode, and expect to intersect it in about 9 or 10 ft. driving. I have concluded it was best to do this before driving on the main lode from the shaft, in order to avoid the mixing of ore and poor stuff, which otherwise must necessarily be the case in so contracted an area. The counter lode ought to be reached in a week from the time of starting the cross-cut. The hard frost still prevents the dressing of ore.

**MELLYNAR COPPER.**—John Gilbert, Jan. 29: The lode in the 20, west of Edean's shaft, is 3 ft. wide, and worth 2½ tons of copper ore per fathom, and looking very promising for further improvement. The lode in the 40, west of shaft, is 2 ft. wide, and producing very good stones of copper and lead ore. The lode in the 50 fathom level, west of the shaft, is 2½ ft. wide, and worth ½ ton of ore per fathom. The lode in the 60 fm. level, west of the shaft, is 3 ft. wide, and worth 2½ tons of ore per fathom. The winze in the bottom of this level, west of the shaft, is worth 3 tons of ore per fathom. The lode in the 70, west of shaft, is 4 ft. wide, and worth 2½ tons of ore per fathom. The rise in the back of this level, west of the shaft, is worth fully 4 tons of ore per fathom. We are expecting every day to communicate this rise with the winze sinking in the bottom of the 60. The lode in the 80, west of shaft, is 6 ft. wide, and worth 2½ tons of ore per fathom. The lode in the 90, west of shaft, is 4 ft. wide, and worth 4 tons of ore per fathom. The winze in the bottom of this level, east of shaft, is worth 2 tons of ore per fathom. The lode in the 100, west of shaft, is 5 ft. wide, and producing a little saving work for copper ore. The lode in the 100, east of shaft, is 2½ ft. wide, and worth about 1 ton of ore per fathom.—Skip Shaft: The lode in the 100, west of the skip-shaft, is 4 ft. wide, producing some good saving work for tin, worth for both about 5s. per fathom. We have had no increase in the water for the past week, and all our machinery is working well. The mine is in fork throughout.

**MELYNDR.**—John Kitto, Jan. 25: We have made fair progress during the past month with the driving of the 25 cross-cut north from Bowman's shaft, and so far, I am glad to say, our operations have been interrupted but little by the frost. Since my last monthly report we have intersected a small branch in the cross-cut, which is letting out a strong feed of water, and the general character of the ground through which we are driving seems to indicate the near approach to the lode.

**MINERAL CORPORATION OF GREAT BRITAIN.**—W. Bennett, Jan. 29: HARTY AND HIGH HAFYA MINES: In the No. 1 adit nothing has been done in No. 1 end since last week's report, as we have taken the men for the time being to another part of the mine. Stope in back of No. 1 adit is worth 1 ton of lead to the fathom. In No. 2 level the lode in the end is still improving as we advance west. In the No. 3 adit cross-cut the ground has become very wet, letting out a large stream of water. We have broken some nice stones of lead. I hope to be enabled to speak more on this in a day or two. In No. 4 adit the lode in the end has very much improved since my last report; the lode is now producing some good lead.

**GREAT DERSBY.**—The men are still making fair progress in driving No. 5 deep adit cross-cut. The two branches that I have referred to in my last reports are still holding on. We are taking out ground for the smith's shop, and hope next week to commence building same.

**BRYN CANADON.**—We are busily engaged clearing up the old men's workings sunk in the bottom of the adit levels. Saturday next being our monthly settling day a full report of the mines shall be sent next week.

**MONYDD GORDDU.**—J. G. Green, Jan. 28: The pumping-wheel has been frost bound since my last, and the water has risen in the mines to within 4 ft. of the 127. The weather is a little milder to-day, and we are doing our best to clear away the accumulation of ice with a view to starting the wheel. Should a thaw

set in we can push on with the dressing of ore from the 12. The only bargain worked for the week have been the 12 and, driving west, where there is no change to note, and the stope on the main lode over this level. This has holed into the winze sunk below the adit, so that we have good ventilation at this point; the lode is worth 20 cwt. per fathom.

**MORFA DU.**—T. Mitchell, Jan. 30: I have nothing new to report to-day; everything going on regularly as usual.

**NORTH CREEKBY.**—M. George, Jan. 29: There is no alteration in the sinking of the engine-shaft since last report. The lode in the 24, driving east of the engine-shaft, is 4 ft. wide, and yields copper ore to value. The lode in the 24, driving west of engine-shaft, is 6 ft. wide, and worth 1 ton of copper ore per fathom, with a good appearance. The lode in the 12, driving west of the cross-course, is 5 ft. wide, and yielding 1 ton of good ore per fathom. The lode in the winze sinking below the 12 is 5½ ft. wide, and worth 2 tons of copper ore per fathom. The pitches continue to yield the usual quantities of ore. The work throughout the mine goes on well.

**PARTS MOUNTAIN.**—T. Mitchell, Jan. 30: I have nothing new to report to-day; everything going on regularly as usual.

**PATELEY BRIDGE.**—Capt. C. Williams, Jan. 30: The 30 east, on Rake vein, is at present hard, and the vein pinched rather small, worth ½ ton of lead ore per fathom, but likely to soon improve again. The stope in the back over this end is looking well, and worth 1 ton of lead ore per fathom. The sump winze, sinking under the 30, is in a capital lode, worth 10 tons of lead ore per fathom. This speaks well for the future of the mine. The Lumb vein, in the 20 west, is improving, both in appearance and value, being from 8 to 10 ft. wide, and producing large blocks of solid lead throughout, worth 1½ ton per cubic fathom. The Rake vein, in the stope in the back over the 20 east, is worth ½ ton of lead ore per fath. The tribute pitch in string is worth 15 cwt. of lead ore per fathom. Fielding's vein, in 20 north-west, is worth 1 ton of lead ore per fathom, and looking well for further improvement. Other points unchanged. Dressing and smelting are proceeding satisfactorily. The pumping machinery is in a good state of repair, and working well.

**PENHALLS.**—S. Bennetts, P. Vian, Jan. 25: The north part of the lode in the 70 east end is worth about 6½ per fathom. Two stops in the back of this level are worth respectively 6½ and 8½ per fathom. In the 60 east end the top lode is at present small. On another section of the lode the 65 east end is worth 6½ per fath. There is not much change to notice in any other of the points of operation.

**PRINCE OF WALES.**—J. Andrews, Jan. 29: There is no change in the muddle or silver lode, as the tributors are now engaged in dressing up their silver.

**PRINCE PATRICK.**—H. B. Vercoe, Jan. 28: I beg to hand you my monthly report, and in doing so I am pleased to say the good prospects referred to in former reports continue, and the mine during the past month has greatly improved. The 50 has been driven about 5½ fms. on the course of the lode, the whole distance through a rich course of ore averaging over 5 tons of lead per cubic fathom. A cross cut is being driven to prove the width close to the forebrest. In this cross-cut the yield of lead is fully 7 tons per cubic fathom. The width I cannot yet state, but we have proved it for 2 fathoms wide, and a magnificent course of ore. About 10 fms. behind the end we have driven cross cuts to both walls; here the width of lode is 5 fms., a rich course of ore all the way, and some fathoms of it produced over 5 tons of lead per cubic fathom. I have suspended the drive from sump in bottom portion of flat, as we are not in want of ore, and have placed the men to cut a small lodge preparatory to sinking another trial sump 6 fathoms behind the forebrest. In this sump we expect to open a rich section of ground, as there is a rib of ore going down vertically in the level 2 ft. wide. The 62 has been driven south from Hughes' shaft during the month about 8 fms.; the portion of lode we have in the end is very promising, and is easy for exploring. As we shall have reached the distance required to commence a cross cut to the north and south lode by the end of this week, I am confident that before the month of February terminates a valuable discovery will be made at this point. Our raisings of ore for January are about 50 tons. This has been got from the drives alone, and when we have intersected the lode at Hughes' shaft I expect to be in a position to exceed this without exhausting any of the reserves of ore. The mine is opening out in a splendid manner, and making good monthly profits, and with a little advance in the price of lead will become one of the best-paying properties in Flintshire.

**RED ROCK.**—J. K. Jan. 29: We have not been able to do anything in the 72 since the date of my last report, on account of the frost, which has occasionally stopped our pumping at night, but I am glad to say that every other part of our underground workings, except the sinking of the eastern shaft, have been continued without interruption. This, however, I scarcely need say has only been accomplished with the greatest possible care and attention, but we consider it advisable and absolutely necessary to keep the mine as clear of water as possible, or the damage to levels and other parts of the workings would be much more serious than the extra expense attending the keeping of the pumps in operation. The sinking of the eastern shafts has been somewhat delayed in consequence of the weather, and less progress has been made than otherwise would have been. The stope throughout the mine have been continued, and about the usual quantity of ore has been broken, but our dressing operations have been almost entirely suspended, and we have been unable either to dress or sample a parcel of ore as we otherwise should have done, but we shall sell another 40 tons as soon as we can dress up the leadstuff we have broken.

**ROMAN GRAVELS.**—Arthur Waters, Jan. 30: There is no material change here worthy of remark since my report of the 23rd inst. I may say that the mine continues to open up well, and it is to be hoped that we shall soon have better prices for the ore. The weather is still very severe, preventing the dressing all we are waste heaps.

**ROCKHOPE.**—T. Davidson, Jan. 30: We have been engaged filling up open ground in adit level in order to keep the place safe. In the cross-cut from the 15 into the south side of vein, in No. 3, on section east of Low shaft, I have placed the other four men, so that we are driving both east and west; each end is valued at 8 cwt. per fathom. In cross-cutting from the 25 in the same side, immediately below the above, the ground is extremely hard, and have not met with anything of importance yet. The driving west from winze, 4 fms. below the 25, on No. 2 section, east of Low shaft, is valued at 10 cwt. per fathom. We have holed the rise to old winze, on No. 2 section, east of Low shaft, so that we have got a good road down here to the 42, and are starting to drive east from winze, but not being yet fairly into the vein we have no ore to value. In the driving west from old winze, on No. 7 section, east of Gin shaft, the vein has been poorer this week; this I think will only be temporary; valued at 8 cwt. per fathom. I have stopped the rising at Low shaft bottom, and set the men on to stopping, as we found the ore to improve in rising. I think this a place of importance, and will increase the openings as soon as we are fit up; valued at 8 cwt. per fathom. The weather still continues very severe.

**SOUTH COUDROW.**—W. Rich, W. Williams, H. Abraham, Jan. 28: The lode in the 30 east end is worth 8½ per fathom. The rise in the back of this level is worth 10½ per fathom. The 40 east end is worth 16½ per fathom. The 40 west yields low quality tinstone. The rise in the 50, east of King's, is worth 12½ per fathom. We have intersected the south part of the lode in the 50 cross-cut, west of King's shaft; the lode is not yet cut through, but so far as seen it has a kindly appearance, and carries stones of tin. In the 60, west of Plantation shaft, we are cutting through the lode. The rise in the back of the 50, east of this shaft, is worth 25½ per fathom. The rise in the 60, east of King's, carries a little tin. The 70 east yields stones of tin. The 70 west is worth 8½ per fathom. The Plantation shaft, below the 70, is worth 10½ per fathom. The 80 east end is worth 7½ per fathom. The rise in the back of this level is worth 17½ per fathom. We are driving the pumping engine about 11 strokes per minute, and draining the 93 fm. level slowly.

**SOUTH DARREN.**—H. James, Jan. 30: The shaftmen are putting in penthouse, cutting ground for shaft-tackle, &c., and by the end of next week this will be finished, when sinking will be resumed at once with all possible speed. In the 100, west from shaft, we are driving in a nice looking rock by the side of the lode, and from the mineral appearance of the lode on the wall, close to the forebrest, it will equal, if not exceed, the value of it when last taken down, valued at 18½ per fathom; as yet we are not able to take it down, the level being full of stuff. The lode in the 100, east from No. 2 winze, is improving, worth 25½ per fathom; for the first 4 fathoms in this driving the lode was worth from 30½ to 40½ per fathom, but at this point it became contract and poor, caused by cross-pitches, &c., but in getting through them the lode is formed more regular and compact, and likely to improve. We have about 9 fathoms to drive to communicate with the same level from shaft, and from the favorable appearance of both ends all will be in good ore ground. In the driving west from the above winze the lode is worth 30½ per fathom; but, judging from the 90, we may soon expect to enter a short run of poor ground, but will alter through it to be under a point where the lode is setting down strong, valued at from 30½ to 45½ per fathom. Since the lode was last taken down in the 90 we have driven 3 fathoms by the side, and as soon as we can get the level cleared of stuff we shall strip it down; when last taken down it was valued at 45½ per fathom. We may also expect here shortly to be into a piece of poor ground for a few fathoms in length wrought upon in the 80, but beyond this there is a good section of ore going down, and for about 15 fathoms, worth from 20½ to 30½ per fathom. The average value of the three stops in back on the 90 will be about 22½ per fathom. The lode in the 80 end is at present more mixed with copper ore, worth for lead and copper ore 20½ per fathom. The stope in the back of this level is worth 27½ per fathom for lead and copper ores. There is no change in any other point of operation worthy of remark.

**SOUTH MOLTON CONSOLS.**—T. May, Jan. 28: The ground in our adit level still gives a favorable appearance. We have met with another little crossing, which has greatly improved the ground for driving, and our men are likely to give a good drive this month.

**SOUTH MOLTON CONSOLS.**—T. May, Jan. 30: The ground in our adit level still continues to give a favorable appearance, and we are frequently meeting with croppings of flookan and priam, with spots of copper, and the ground has become more favorable for driving.

**SOUTH ROMAN GRAVELS.**—John W. Powning, Jan. 30: Shelfe: Better progress is being made in sinking the winze below the deep adit on Sawpit vein, and the portion of the lode carried is of a most promising character, nicely spotted with lead. We hope to reach the 15 by the end of next week. I purpose boring through the part of the lode standing east against the hanging wall on Wednesday next, and will send particulars in time for Thursday's meeting.

**SOUTH TOLCARENE.**—W. Rich, J. Knowlton, Jan. 28: The lode in the 36 east maintains its size and kindly appearance, and carries a little ore. The rise in the back of this level is not so good as it has been.

**TANKERVILLE.**—Arthur Waters, Jan. 30: Watson's engine-shaft is being sunk below the 206 at the rate of about 3 ft. per week. The 206 west is still without ore to value. The same level east looks like entering a large cavity; the lode in the present end, as far as can be seen, being 6 ft. wide, well charged with lead ore. We shall be able to see more of this point by next reporting day. The stope generally are yielding ore in quantities equal to those mentioned in last week's report. The hard frost much retards dressing operations.

**TEMPLE.**—Jan. 29: The lode not having been taken down in either level there is no change to report this week, neither has anything occurred in the mine worthy of special mention. As surface we are still completely frost-bound, and therefore, the operations are still in abeyance.

**VAUGHAN.**—Jan. 29: The cross cut south at the deep adit level has been extended 14 fms. through an unproductive lode, which we have now suspended driving, the lode in the present end being very soft, broken up, and poor. In the deep adit level the part of the lode carried is hard for exploring, being composed of blue clay-slate, carbonate of lime with small spots of lead and blende occasionally. In the 30 west of cross cut, on the south part of the lode, the lode at present is disordered by a cross joint dipping west, which as we advance from its influence the lode is again improving; now yielding 15 cwt. of lead ore per fathom. In the winze sinking under the 30 east the lode is large, containing small branches of lead ore, saving work for dressing. At surface the machinery is at a standstill owing to severe frost.

**WEST TANKERVILLE.**—Arthur Waters, Jan. 30: The 86 shaft is up to a point where the lode is split into two divisions, the hanging-wall part being worth ½ ton of lead ore per fathom. There are 11 tribute pitches at work by 30 men, at an average price of 4½ lbs. per ton, tributors paying all costs, including 20s. per ton for dressing. We have to-day sold 25 tons of lead ore for 231½ lbs. 6d.

**WEST VOR.**—S. Harris, Jan. 30: The adit level east of cross cut, on south lode, has been driven in the past week 3 ft. 6 in.; the lode continues full 4 ft. wide, containing a quantity of blende and a little tin. I never saw a more kindly lode, and am anxiously looking forward to an improvement for tin. I assayed two samples from it this morning, both of which produced tin, but not sufficient to value; but as the lode is of a good size and highly mineralised, I think we have good grounds to rest our hopes on.

**WEST WYE VALLEY.**—John Kitto, Jan. 25: In consequence of the severe weather our pumping-wheel has been standing during the greater part of the past month, and nearly the whole of our underground operations below the 14 have been suspended. The reservoirs and watercourses have, in consequence of the frost and snow caused considerable trouble and expense, but the former, I am glad to say, with constant watching, have not been damaged to any extent, but the ice is still very troublesome. Our dressing operations have been almost entirely suspended, and scarcely any orestuff has either been drawn up or dressed, neither can it be until the weather moderates. The 52 east looked very well at the time it was suspended by the rising of the water, but this level has not been seen since the date of my last report.

**WHEEL OREBOR.**—John Andrews, Jan. 27: Setting Report: To drive the 120 east, by four men, at 6½ lbs. per fathom. The lode in the end has very much improved in appearance in the last two or three days, as in cutting in south, east of the oblique branch crossing the lode, we find good copper ore, but to what extent I am not in a position to say, as we have not yet seen the south wall of the lode. No. 1 stope in back of the 120, by six men, at 45s. per fathom; lode worth 8½ per fathom. No. 2 stope in back of the same level, by six men, at 55s. per fathom; lode 3½ ft. wide, worth 10½ per fathom. To drive the 108 east, by four men, at 5½ per fathom. At this point the lode has fallen off in value, and is now 3 ft. wide, composed of quartz, peach, blende, and copper ore, but we shall keep it as I regard as temporary, as I think it will soon improve again. To drive the 72 east, by two men, at 5½ per fathom; lode small and poor. To drive the 45 cross-cut north, by two men, at 7½ per fathom. To sink the new shaft below surface, by nine men, at 13½ per fathom; lode 1 ft. wide, yielding some good-quality blende, and occasional stones of copper ore.

**WHEEL GREENVILLE.**—T. Dodge, Jan. 29: Gould's shaft is 12 fms. 5 ft. below the 150; the old lode produces some good stones of tin and strong spots of yellow copper ore, a very promising lode. The flat lode is standing in the footwall, the value of which is not known. The 150 east end is producing low-price tinstone. The 140 east end is improving as we drive the lode; the bearing part is opening out wider, and producing some fine stones of tin. The 140 west end is worth about 5½ per fathom. The 130, east of the western shaft, is opening out tribute ground. No other changes in the bargains. We set several pitches on Saturday last, the tribute varying from 10s. to 13s. 4d. in 11.

**WYE VALLEY.**—John Kitto, Jan. 25: I am sorry to inform you that the severe frost has stopped our pumping wheel, and prevented the driving of the 46 east during the whole of the past month, but all other underground operations have been carried on in the mine without interruption. The lode which is being driven east from bottom of winze, at about 12 fms. below the 22, has been very good since the date of my last report, and is still yielding rich ore, and I am also glad to say that the 22 fathom level east, and almost in close proximity to Tippet's shaft, is likewise yielding ore in saving quantities, and looking very likely to further improve. The tribute pitches above the 22 are still producing a full average quantity of ore, but in consequence of the severe weather our driving operations have been suspended with the exceptions of a few days, and we have not been able to sample another parcel of ore, as we otherwise should have done, but we shall keep it as I regard as temporary, as I think it will soon improve again. We have already broken the lode, and the weather will enable us to dress up the orestuff we have already broken. The price of the mine altogether has much improved since my last report, and never looked more promising for the future than at the present time.

## FOREIGN MINES.

**ST. JOHN DEL REY.**—Telegram from Morro Velho, dated Rio de Janeiro, Jan. 29: Produce nine days, second division of January, 9250 ozt. = 3584½; yield, 5.6 ozt. per ton.

**DON PEDRO.**—Telegram from Rio, dated Jan. 23: Produce cleaned up (first division of January), 1500 ozt.

**FRONTINO AND BOLIVIA.**—The directors have received advices, dated Dec. 12, accompanied by a remittance of gold valued at 38500. The accounts for November show—124 tons treated, produced 1184 ozt. of gold, or an average of 18 dwts. per ton; 488 ozt. of gold dust bought from miners on tribute—total, 1472 ozt.; value 38500. Mine cost at Bolivia and expenses in London and Medellin, 2193½; gold bought, 1013½ = 3206½; profit, 643½. During the month 124 tons were treated from the Silencio Mine, which yielded 509 ozt. of gold, or an average of 4 ozt. 2 dwts. per ton. The cost at the mines during the month appears to have been increased by the purchase of an additional amount of stores.

**ANTIOQUIA.**—The directors have received advices, dated Dec. 12, accompanied by a remittance valued at 4080. The accounts for November show—123 tons treated produced 132 ozt. of gold, or an average of 21 dwts. per ton, value 4080; cost at the mines and at Medellin, 3584½; profit, 500. In addition to the above cost of 357½ lbs., the sum of 146½ has been spent on capital account.

**ALMADA AND TIRITO CONSOLIDATED.**—Telegram from Mr. Clemes, dated Jan. 8: We have remitted you ores and bullion, \$3500.

**SIERRA BUTTES (Gold).**—Telegram from Mr. Coulter, the agent in San Francisco: The supply of water at the Sierra Buttes Mine is now abundant, and everything is working.

**RICHMOND CONSOLIDATED.**—Telegram from the mine at Eureka, Nevada: Week's run, 20,000, some 100 tons of ore. Week's produce of refinery, \$30,000. Furnaces working well. RICHMOND.

**B. Rickard, Jan. 8:** During the past week work in the mine has been carried on with vigour and with very good results. The No. 11 chamber is opening out very well, and turning out very good grade ore. The No. 12 chamber is very much improved; the grade of ore is higher than it was when we started to stope. The 400 cross-cut has been extended 17 ft. in very hard ground; in the present end the ground is much easier. We have 90 ft. more to drift to intersect the rise in the back of No. 11 chamber. The 600 north cross-cut has been drifted 14 ft. in hard limestone. The 200 south-east cross-cut has been extended 30 ft.; ground with little change. This cross-cut has been kept open for the time, and the Bag leigh drift put to work in the 600 main west drift. The 800 winze has been sunk a distance of 17 ft.; the present bottom is in quartzite. The 900 west drift has been extended 30 ft., making a total distance from the 900 station of 349 ft. The 1000 ft. level has been drifted 13 ft. on quartzite for about 6 ft. of the drifting; indications were very favourable for the ore, but at present it is not looking so well. The furnaces are running very steady. The hydrocycle was started on Monday. All the machinery, both in the mine and smelting works, is running smoothly.

**ISABELLE (Gold and Silver).**—Jan. 6: The manager writes as follows:—The bridge over Silver Creek, and the road therefrom to the tunnel mouth are both completed. Three or four days more will finish the grading for the buildings to receive the air-compressors and boilers, also for the blacksmith's and carpenter's shops. There being no lumber in the vicinity, I purchased a new building 74 ft. by 32 ft., which, divided as follows, will furnish the necessary accommodation: Engine-room, 20 ft. by 32 ft.; boiler-room, 20 ft. by 32 ft.; blacksmith's shop, 16 ft. by 32 ft.; carpenter's shop, 16 ft. by 32 ft. This building I have taken down and am now hauling to the grade. I had to take three men from the grade to do this work, else it would have been completed, but I was anxious to have the building done, and the materials to their demand, before another fall of snow should make this impossible. I have had two permanent stone pillars firmly set as monuments for the tunnel, and as soon as the grading is completed I shall commence the open cut, which will be about 40 ft. before I get under cover. From the appearance of the grading last night I shall strike rock sooner than I expected. I am glad of this, as I can make better running with the drills than with pick and shovel.

**MINERAL HILL.**—Mr. Plummer, Jan. 7: Mineral Hill: In the Mammoth Mine we are driving through a piece of ground towards the southern boundary of the Star Mine, and in the south part we are driving southward; both these levels show a very congenial limestone, and few of the ore are met with almost every day. Union District: The shaft is a little tighter than usual. A few days ago we broke some very rich ore among the lower grades. In all other respects the shaft is without change.

**TOLIMA.**—The Frias November returns show a profit of 1798½ lbs. 11d. The manager reports 176-80 fms. of ground expended, of which 49-60 were unproductive, leaving 127-20 of productive ground. The following observations occur in the superintendent's letter:—It is satisfactory to observe that whilst our returns and margin of profits during the year just passing away have steadily improved, owing more or less to the mode of treatment of the ore at surface, and to the endeavour to discover and win ores from the mines in the largest possible quantities and by the most systematic methods, the underground resources of the property have been diligently developed, and should the discoveries of ore just made in Welton's vein maintain their present promising appearance, these resources will be considerably augmented. Engine shaft: On my last visit to the bottom of the shaft the vein on the footwall was from 8 to 9 in. wide, consisting chiefly of spathic iron, quartz, and spots of pyrites; I did not observe any other mineral, but there are signs of the approaching junction with Welton's lode. The 20 east is steadily advancing into new and unexplored ground; the vein is twofold and quite poor, but richly mineralised. In the 20 west, on main lode, the vein continues hard and poor, and progress slow; the only mineral present is non-argiferous pyrites. The 20 south-west is being slowly extended in consequence of the hardness of the ground upon the branch of lode forking from the main vein. As the leader keeps its direction to the south-west, and as we believe it to be connected with some other vein to the south, we continue to follow it, as the test also serves the purpose of a cross-cut. The lode in the 30 east, on south branch of main lode, continues large and strong, consisting chiefly of strings of quartz, associated with lead and blende, and intermixed with gangue, but capable of being successfully treated at the crusher. My impression is that the richest body of Esperanza vein is to be found beneath this level in accordance with the dip of the mineral. In the workings in the 30 fm. level stops, east of winze, the south portion of the lode has been chiefly followed upon a small but productive vein, yielding good quality crusher stuff. An improvement has taken place in the 30 fm. level stops, west of winze, and although the vein is still somewhat bunched and irregular in its yield, it produces at times fine discoveries of mineral of rich quality, and which holds down in considerable strength. Ore Stations above the 30: A branch of productive mineral is lying to the south of main lode, and is being followed with satisfactory results, owing more or less to the mode of treatment of the ore at surface, and to the endeavour to discover and win ores from the mines in the largest possible quantities and by the most systematic methods, the underground resources of the property have been diligently developed, and should the discoveries of ore just made in Welton's vein maintain their present promising appearance, these resources will be considerably augmented. Engine shaft: On my last visit to the bottom of the shaft the vein on the footwall was from 8 to 9 in. wide, consisting chiefly of spathic iron, quartz, and spots of pyrites; I did not observe any other mineral, but there are signs of the approaching junction with Welton's lode. The 20 east is steadily advancing into new and unexplored ground; the vein is twofold and quite poor, but richly mineralised. 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Tankerville, 2½ to 2½; the agent considers that he sees his way to return 25 tons of crop ore per week as soon as the frost breaks up. West Tankerville has sold 25 tons for 231l. 7s. 6d. Bettwys-Coed, 1½ to 1½; Glenroy, 7s. 6d. to 12s. 6d.; Leadhills, 1½ to 2; Mineral Corporation, 10 to 11; Pateley Bridge, 15s. to 25s.; Pandora, 7s. 6d. to 12s. 6d.; Rockhope, 2s. 6d. to 5s.; South Roman Gravel, 2s. 6d. to 5s.; D'Eresby Mountain, 3d. to 4d.; Aberllyn, 10 to 12; Cementina, 1½ to 1½; Caron, 1½ to 2½; Frongoch, 2 to 2½; Grogwinion, 1½ to 2½; Hartington Moor, 1½ to 2; Mawston, 1½ to 2; Red Rock, 1½ to 2½; West Wye Valley, 1½ to 2; Wye Valley, 1½ to 2.

FOREIGN MINES.—Cape Copper, 2½ to 30½; Colorado, 1½ to 2; Chontales, 7s. 6d. to 12s. 6d.; Don Pedro, 15s. to 17s. 6d.; Eberherdt and Aurora, 3½ to 4; Flagstaff, 5s. to 10s. Frontino and Bolivia, 2½ to 2½; the profit on the month is 643l. 2s. 8d. New Zealand Kapanza, ½ to ½; Last Chance, ½ to ½; New Quebrada, 1½ to 1½; Port Phillip, 10s. to 12s. 6d. Richmond, 9½ to 9½, ex div.; the directors have declared a dividend of 10s. per share. St. John del Rey, 265 to 275; Santa Barbara, 37s. 6d. to 42s. 6d.

The Market for Mine Shares on the Stock Exchange has been less active during the week, probably owing to the first few days being occupied by the settlement; but the favourable feeling as to the immediate prospects continues. The circumstances of the French people having, for the first time during a century, succeeded in changing their rulers without disturbance and in a constitutional manner produced a favourable effect upon the French markets, which was speedily reflected upon the London market, and to-day there has been a general firmness, which will no doubt extend itself to mine shares. The dealings to-day have been confined to a transaction in Assheton at 5s., one in Flagstaff at 7s. 6d., and two or three in Richmond at 9½ to 9½ ex div., and in St. John del Rey at an average of 267½. The Richmond dividend is payable on Tuesday next. East Pool has declared a dividend of 3s. per share. The quotations for many mine shares are still nominal, but sales are more readily effected than they have been of late.

Amongst the new undertakings introduced during the week is the Llansawel Lead Mining Company, with a capital of 30,000l., in shares of 5l. each, which has been formed to work a sett about one mile square, and containing the westward continuation of the celebrated Nant-y-Mlyn lodes, which have been worked to immense profit. The sett is held for 21 years, at a rental of 20l. per annum, merging into a royalty of 1-16th. The prospectus, which will be found in another column, states that much useful work has already been done, and that, judging from the quantity of ore, the mines have already yielded, and the present existing defined lodes, together with the favourable reports of experienced mining engineers, it is confidently anticipated that with a further moderate outlay in the erection of necessary machinery, and for further development, the mine will be productive and profitable. The services of Mr. R. J. Freeshville, A.R.S.M., who has had ten years' practical experience of mining, both at home and abroad, have been secured as consulting engineer for the company. The purchase money is fixed at 15,000l., of which 2000l. is payable in cash by instalments, and the remainder by 2600 fully-paid shares. It is provided that these fully-paid shares shall not be transferable until the ordinary shareholders have received 5 per cent. dividend "out of profit," nor until 1000 other shares (capital shares) shall have been applied for and all-ited. This arrangement affords some protection to intending investors, inasmuch as it ensures the raising of 3000l. working capital before the vendor's shares can be placed on the market, for it will be seen that separately neither the declaration of the dividend of 5 per cent. nor the issue of the 1000 capital shares unlocks the vendor's shares. Had the restriction been extended so as to prevent transfer of vendor's shares until the 5 per cent. had been earned and paid upon the whole remaining 3400 shares, and a provision introduced forbidding allotment until at least 2600 capital shares had been subscribed for, investors would have been offered a better guarantee than has been offered since the limited liability system has been introduced, and failure to secure support would have been almost impossible.

The Old Telegraph (Utah) Mine is about to be worked by a French *société anonyme*, with a capital of 17,000,000 francs, or 680,000l., in shares of 500 francs, or 20l. each, under the title of "Mines d'Argent et Fonderies de Bingham"—the Bingham Silver Mines and Smelting Company. The company's prospectus states that the mine is at present in full operation, and making a net profit of 346,500 francs (13,860l.) per month, which ought to be doubled this year with present developments and improvements. The statements would appear to require either verification or explanation.

The inapplicability of the electro-light for general illuminating purposes becomes each week more evident. It has been tried for 24 nights, four hours each night, at Westgate-on-Sea; and Messrs. Bennett and Valon, who were employed by Mr. E. F. Davis, the owner of a considerable portion of Westgate, and of the local gas-works, have made a long report on the results of the trials. As Mr. Davis has to supply Westgate with light, it was to his interest to obtain the cheapest light, whether gas or electricity. On the 8th road six lamps each, containing four Jablockhoff candles, were placed 80 ft. apart. The current was produced from a six-light Gramme machine, driven by a Garrett and Co. portable engine, 10-horse power nominal. The current was divided into two circuits, three lamps being placed on each. Upon eight occasions during the 96 hours candles went out, which is attributed to faulty carbons, and each time the others on the same circuit were also extinguished. The lamps were in globe at the Thames Embankment, and each was found by photometer experiment to be equal to 197 standard candles. The cost of the electric light for working expenses alone for the 96 hours was 40l. 9s. 4d., and this sum includes fuel, water, oil, 586 Jablockhoff candles at 8d. each, and the wages of two attendants—one for the engine and one for the machine and lamps. The six electric lamps gave 1182 candle-power. To produce the same amount of light with the Westgate gas at 6s. 6d. per 1000 cubic feet would cost 16l. 15s. 4d. for the 96 hours, or 23l. 14s. in favour of gas. At the London price of 3s. 6d. per 1000 cubic feet the gas would cost but 7l. 18s. 9d., as against 40l. 9s. 4d. for electricity. To light Westgate with six Jablockhoff lamps for a year of 4327 lighting hours would cost 1876l. 0s. 8d., or 1s. 2½d. per light per hour. The cost of supplying the same illuminating power with gas at the Westgate price, including lighting, cleaning, and repairing, 825l. 14s. 10d. At London prices, and including lighting, cleaning, and repairing, the cost would only be 427l. 13s. 3d. In concluding their report, Messrs. Bennett and Valon observe that the exhibition of the electric light, as such, was most successful at Westgate. At the same time they state that that method of illumination is surrounded by so many practical difficulties that no amount of improvement is likely to fit it for adoption. They observe that the liability of the machinery to derangement at any moment, the defective character of the candles, the incessant variation of the illuminating power, want of diffusibility and means of storage, the constant care and attention the lights require, and the enormous cost of producing the light, all unfit it for use as a general public illuminating agent.

St. John del Rey, 265 to 275; the latest telegram from Morro Velho, dated Rio de Janeiro, Jan. 29, states that the produce of the second division (nine days) of January was 9250 oits., of the value of 3584l., the ley of the ore being 13 oits. per ton. Don Pedro North del Rey, ½ to ½; the latest telegram from the mine, dated Rio, Jan. 23, states that the produce for the first division of January was 1500 oits. Almada, 1s. to 3s.; a telegram from Mr. Clemes states that 3850 lbs. have been remitted in ore and bullion. Frontino and Bolivia, 3½ to 2½; the advances to Dec. 12 are accompanied by a remittance of 3850l., being the November produce, the profit upon which was 643l. It is stated that during the month 1¼ tons of Silencio ore yielded 500 ozs. of gold, or 4 oz. 2 dwts. per ton of ore. The November profit of the Antioquia Company was 50l. The Tolima Company's advances, received on Tuesday, show the profits for November to have been about 178l. sterling.

Richmond, 9½ to 9½, ex div.; the usual telegram from the mines at Eureka, Nevada, states that the week's run was 350,000, from 1000 tons of ore. The week's produce of the refinery was 330,000. The furnaces are working well. The directors have declared a dividend of 10s. per share, payable out of last year's profits, and announce that they have sufficient profits remaining in hand to pay the debentures falling due in March. The manager's report (January 8) states that during the past week work in the mine has been carried on with vigour, and with very good results. The 1000 ft. level has been drifted 13 ft. on quartzite; for about 6 ft. of the drifting indications were very favourable for ore—t present it is not looking quite so well. The furnaces are running very steadily. The hydrocycle was started on Monday. All the machinery both in mine and smelting works is running smoothly. The report of Captain Tonkin, the agent sent out by Messrs. John Taylor and Sons at the request of the late committee of investigation, has just been received by the directors, but does not appear likely to prove of any practical value, since in the most important particular—the estimate of the reserves—Captain Tonkin, probably from his being an entire stranger to the mine and district, puts them at 12,000 tons, without giving data for his estimate, whilst Mr. Rickard, who has never been in the habit of making exaggerated statements, and furnishes the requisite data, shows those reserves to be more than three times Captain Tonkin's estimate. The absurdity of sending a man to report upon a mine and district with which he is not familiar has frequently been pointed out, and this would appear to be a confirmation of that view.

Colorado ranks third among the gold and silver producing States. In her mountains is enclosed a world of hidden wealth—in fact, mining stands first in the resources of the Territory. The yield of gold and silver from Colorado for the past year is calculated at \$10,000,000. The total production from the Colorado Mines up to Jan. 1, 1878, amounted to \$72,000,000. New mines are discovered and opened, and new mining works built every year. In fact, the apparently inexhaustible mineral deposits of the State have but just begun to be developed. Over 20,000 tons of ore are treated each year at the Black Hawk. Hualfai, 2½ to 3; one of the directors at present at the mines writes:—"I went to the mines to-day. The frost has interfered with the completion of the above groundwork somewhat, the house over the engine not being first-rate. The mine

is made up with mineral waiting to be drawn, which will be got out this week. Tannatt says, 'The more he sees of the mine the better he likes it. Nearly all the men are at present working at the mines.'

Lead mine shares are by no means active, although there is probably more business doing in them than in other descriptions. The recent frost has rendered dressing operations impracticable, so that even where ore is being broken it cannot be got to market. Van, 16½ to 17½; the 90 west has further improved during the week. Other parts of the mine are unchanged. The sale next week will be 400 tons of lead and 150 tons of blende.

Mineral Corporation, 10 to 11; the three mines are now fairly at work. The lode in the No. 2 level end, in Hafna, is still improving in going west; and the No. 3 adit cross cut is letting out a large stream of water, which is the usual indication of approaching good mineral ground; indeed, they have already broken some fine stones of lead. The lode in No. 4 adit is now producing some good lead. At Great D'Eresby the two branches of mineral already noticed continue to hold. Operations in Bryn Canadon are still confined to clearing old workings. Capt. Bennett promises a full report next week.

Grogwinion, 1½ to 2½; no fresh news of any importance this week. Frongoch, 2 to 2½; excellent progress continues to be made at all points, and prospects have further improved since the date of the meeting. The sinking of the new perpendicular shaft is going on well, and the upper portion is nearly completed, a communication having just been effected between the 56 and the 78. The mine is yielding a saleable amount of lead ore, the lode being raised to 4s.; Rhyma Mountain, 4s. to 5s.; Pateley Bridge, 1½ to 1½; Rhyma Valley, 2s. to 4s.; Rhyma Gravel, 6 to 6½; Rookhope 3 16ths to 5 16ths; Tankerville, 2½ to 2½; Tincroft, 1s. to 1½; Van, 16½ to 17½; West Pateley, 1½ to 1½; Wheel Gravel, 1s. to 1½; Almada and Tinto, ½ to ½; Birdseye Creek, ½ to ½; Blue Tent, 2 to 3; Cedar Creek, 1 16th to 2 16ths; Chontales, 7 16ths to 9 16ths; Colorado United, 1½ to 1½; Don Pedro, 3½ to 3½; Eberherdt and Aurora, 3½ to 4; Emma, ½ to ½; Exchequer, ½ to ½; Flagstaff, 5s. to 10s.; Frontino and Bolivia, 2 to 2½; Hualfai, 2 to 3; Javali, 4s. to 6s.; Kapanza, ½ to ½; Last Chance, ½ to ½; New Quebrada, 1½ to 1½; Postarena, ½ to ½; Placerilla, 2 to 2½; Pumas Eureka, 1½ to 1½; Port Phillip, 10s. to 12s. 6d.; Richmond Consolidated, 9½ to 9½, ex div.; St. John del Rey, 265 to 275; Sierra Buttes, 2½ to 2½; South Aurora, ¼ to ¼; United Mexican, 2½ to 2½.

The directors of the Richmond Consolidated Mining Company have declared a dividend of 10s. per share, payable on Feb. 4. The transfer books will be closed from Jan. 3 till Feb. 3. It is announced that the dividend will be paid out of the profits made last year, and that there is enough profit remaining to pay the debentures falling due in March.

The directors of the Bristol and South Wales Railway Wagon Company (Limited), at the board meeting on Tuesday, decided to recommend a dividend for the past half-year at the rate of 10 per cent. per annum. A petition for the winding-up of the Stanhope Silkstone Colliery Company is to be heard on Feb. 1.

With this week's Journal a SUPPLEMENTAL SHEET is given, which contains:—Original Correspondence: Hoyland Silkstone Colliery Company (J. Higson); Coal Mining and Colliery Management; Gas Safety; Lamps for Mines: Soft Steel and Tin plates; Furnaces for Generating Steam; the "Eclipse" Rock Drill (Hathorn and Co.); Richmond Mining Company; Colorado United Mines; Nouveau Monde Mining Company; Mining Market Notes (W. Gabbott); Employment of Cornish Miners (J. O. Bolton and Son); Parys Mountain Company; the Mold Mining District; Mining in the Gwynedd District (C. Bowden); Cornish Mining (C. Bowden); Foreign Mining and Metallurgy: Sale of Australian Copper—Diamonds in Chile; The Age of Sedimentary Rocks—Meetings of Hornachos, Bodirris, Deubighshire, and East Pool Companies, &c.

COAL-CUTTING MACHINERY.—An improved and economic coal-cutter is at present being introduced by Mr. J. G. Cranston, of Newcastle-on-Tyne, whose name is already favourably known in connection with rock drills and air compressors, and promises greatly to economise labour and increase the output with a much greater percentage of round coal. At the trial at the Trimdon Grange Colliery, in the presence of a number of colliery viewers and mining engineers, the new machine, which is mounted on four wheels to suit the gauge of rail for tubs, and weighs only 4 cwt., complete, gave great satisfaction. The machine cut a 2 in. groove 3 yards along the bottom of the face of coal 3 ft. 4 in. in with one man feeding it along the face, including all stoppages, in 55 minutes. It has one 4 in. diameter steam or air cylinder and 5 in. stroke, the piston having both a reciprocating and revolving motion at the same time. The extreme dimensions are 3 ft. x 2 ft. 6 in. x 10 in. high, so that it takes up exceedingly little room in the confined spaces or low seams of coal. It can cut itself into the coal the desired length, and will undercut the same groove level with the sole or plate below the coal, so that there is not any coal cut to waste other than the 2 in. groove, the diameter of the cutting tool. The machine does not require any fixing when it is at work, and clears itself of the coal dust as it works along. It will with one man and a lad cut 30 yards along 1 yard in a shift of eight hours. It is highly thought of by many practical men, who are capable of knowing its utility, and an early opportunity will be taken to publish an illustrated description of it in the *Mining Journal*.

ROCK BORING.—It is gratifying to learn that the new Eclipse rock-drill, for which the Messrs. Henderson, of Truro, are the agents, is doing remarkably good work. Mr. J. N. Douglass, Trinity House, engineer, writes that a 2½ in. cylinder Eclipse, now employed at the new Eddystone lighthouse, has "entirely fulfilled his expectations. The drill is working very efficiently at a mean pressure of 75 lbs. of air, and the average work executed is equal to that of ten men." This pressure is maintained when the compressor is driven by steam from a boiler on board the Trinity House steamer anchored off the Eddystone Rock, where a steam pressure is not allowed higher than 30 lbs. per square inch. It is also understood that the drill at West Basset, which is driving in ground worth 20l. per fathom for hand labour, is doing remarkably well.

THE GOLD COMPANY.—We find by facts that have been placed at our disposal that in our remarks last week we inadvertently introduced the names of some gentlemen against whose honour and probity no shadow of reflection should have been cast.

THE CONSOLIDATED VIRGINIA COMSTOCK MINE.—At the annual general meeting, held in San Francisco, it was shown that during 1878 the bullion yield had been in silver \$4,225,745, and in gold \$3,770,007, or a total of \$7,996,753. The aggregate dividends amounted to \$41,040,000. The future of the mine cannot be forecasted, as a large extent of ground remains unexplored in the 1850 and 1950 levels, and explorations have only just been commenced on the 2150 level. The chances which still exist for developments of ore in these lower levels, taking into consideration that the lowest—the 2150—is 260 ft. higher than the top of the late ore developments in the Sierra Nevada Mine, give favourable hopes for the future.

VIRNEBERG.—A shipment has been made this week of upwards of 200 tons copper ore of good percentage. There is a large pile left on the mine towards another parcel, and the next shipment is expected about the end of February or beginning of March. The returns are not so good as was anticipated at the general meeting, owing to the unusually severe weather that has prevailed for the last two or three months. This has affected not only the dressing but the other surface work, including the erection of the dressing machinery. The manager's report, published to-day, shows a slight falling off in one or two of the points, but this is doubtless due to temporary changes in the ground.

DRNBIGHSHIRE CONSOLIDATE D.—We refer with satisfaction to the report of the meeting of this company, which appears in another column. The pluck and perseverance displayed by the management deserve the support of every one connected with legitimate mining, and it will be seen that the officials can only expect to re-

ceive compensation for their labour by the success of this undertaking, which seems assured. The plan of operations is both unique and decisive, and the shareholders do not appear inclined to let others reap the advantages of their expenditure by neglecting to absorb the balance of their capital, which the directors have wisely resolved to issue. In these days of disasters in mining undertakings, caused by want of confidence, it is refreshing to note the energy that has been infused into this concern, and we trust with the secretary that the mine will ere long take up the position it seems likely to occupy in the minds of the investing public.

WEST TANKERVILLE.—The 86 south is up to a point where the lode is split in two divisions. The hanging wall side is worth ½ ton. There are 11 tribute pitches at an average of 4½ lbs. per ton, dressed ore. The sale on Jan. 30 was 25 tons of lead ore, and it is expected that the sampling for next month will be quite 25 tons of lead ore and 20 tons of blende. This is very encouraging for the proposed company, East Roman Gravel, now in course of formation to take over and work this property.

DERWENT.—It will be seen by the report in another column that the 93, west of Jeffries' and east of Westgarth's respectively, have now been communicated. The completion of this work, which has occupied some years, will throw open a large amount of stopping ground, and effect a material reduction in the heavy charges hitherto incurred for "dead" work. Immediately on the damage occasioned by the recent fall of stuff in the shaft being repaired, new stopes will be commenced, and the returns increased.

DON PEDRO.—The rich stopes having been unwatered, and the lode intersected very rich by a cross-cut from the deepest level, the returns of gold have trebled within the last two months. A good dividend may be calculated on within the next six months. It is probable that a profit of 500l. to 1000l. will be shown on last month's operations, judging from the clean up for the first division. The next telegram will be due on the 10th instant, giving the total produce.

LEAD MINING IN TEESDALE.—VALUABLE DISCOVERY.—The shareholders in the Green Harth Lead Mine, Upper Teesdale, have in the last few days received information of the discovery of what promises to be a most valuable vein of lead. Mr. C. W. Harrison, Westgate-road, Newcastle, secretary of the company, informs us that during the past few months the directors have been putting down a sump, close to where No. 1 vein was so rich four years since, and a month ago the workmen cut a branch of the vein, worth 1 ton of lead ore per fathom, and a fortnight ago they found the vein itself heading into the sump. They have not yet seen the whole width of the vein, but at present it is estimated to be worth 10 tons of ore per fathom. The sump, which is still in hazel, is down 10 fms., and is within 6 ft. of the limestone, in which it is expected the vein will be found even richer than it has been discovered so far. Four years ago, when this vein was found so rich, the ore was nearly all obtained from the limestone, in which it averaged a thickness of 4½ fms. As soon as the present sump is sunk through the limestone workings will be commenced north and south on the vein under a back or cover of 16 fathoms.

## CAPPER PASS AND SON, BRISTOL

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LEAD ASHES, LEAD SLAGS, SULPHATE OF LEAD, HARD LEAD, BRASS SLAGS AND ASHES, COPPER REGULUS, MATTE, SCORIA, TIN ASHES, TERNE ASHES, &c., and MIXED ORES or REFUSE, containing LEAD, COPPER, TIN, or ANTIMONY.

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ALL KINDS OF MINING MACHINERY SUPPLIED.

Mines carefully inspected and reported on.

Mr. SLACK, having recently inspected Killfretth, feels justified in saying he believes the shares may be bought at present with a fair chance of great fruition.

## LEAD ORES.

Sampled Jan. 8, and sold at the Royal Hotel, Truro, Jan. 23.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Devon Great Consols...	91	£1 3 6	South Caradon	50	£4 9 6
ditto	90	1 3 6	ditto	49	9 15 0
ditto	84	1 3 6	Marke Valley	66	3 0 6
ditto	82	1 5 0	ditto	57	2 11 6
ditto	80	1 4 0	ditto	55	2 8 6
ditto	79	1 4 0	ditto	52	3 0 6
ditto	73	1 6 0	ditto	51	3 7 0
ditto	70	1 7 6	ditto	49	2 10 0
ditto	63	1 5 6	Gunnislake (Clitters)	82	3 14 6
ditto	61	4 7 6	ditto	80	3 4 6
ditto	60	1 4 6	ditto	79	3 0 0
ditto	43	1 2 6	ditto	68	2 19 0
South Caradon	76	3 6 6	Glasgow Caradon	67	3 19 6
ditto	74	3 5 6	ditto	66	3 8 6
ditto	62	4 10 6	ditto	63	3 4 6
ditto	53	2 5 6	Bedford United	45	3 6 6
ditto	61	9 15 6	Wheal Calstock East	7	2 15 0

TOTAL PRODUCE.  
Devon Great Con. 875 ..... £1335 12 0  
South Caradon ... 420 ..... 2107 11 6  
Marke Valley ... 330 ..... 953 17 0  
Gunnislake (Clit.) 309 ..... 1001 1 0

Average standard ..... £ 86 9 0 | Average produce ..... 6½

Average price per ton ..... £2 19 0

Quantity of ore ..... 2182 | Quantity of fine copper 144 tons 4 dwts.

Amount of money ..... £263 14 9 | Average produce ..... 7¼

LAST SALE.—Average standard ..... £ 88 17 0.—Produce, 6¼

## COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Vivian and Sons	428	£ 445 14 6
Grenfell and Sons	43	48 7 6
Nevill, Druce, and Co.	269	627 3 0
Williams, Foster, and Co.	1840	2910 12 0
Mason and Elkington	304	631 13 0

Total ..... 2182 ..... £2643 1 0

NO SALE on Thursday last, January 30.  
Copper ore for sale at Tabb's Hotel, Redruth, on Thursday next—Mines and parcels.—Mellanear 401—West Tolgus 302—East Pool 185—West Seton 121—Wheal Basset 26—West Basset 26—North Trekerby 26—Wheal Comfort 21=1111 tons.

### Notices to Correspondents.

\* Much inconvenience having arisen in consequence of several of the Numbers of the past year being out of print, we recommend that the Journal should be read on receipt; it then forms an accumulating useful work of reference.

Received.—"J. G." (Bucks) had better write to a broker for the information.—"T. S." (Waterford): A full report of the meeting will be found in another column.—"P. A. S." (Continental Diamond Rock Boring Company)—"J. S. M."—"R. H."—"C. E." (Glasgow)—"Shareholder" (Fuller's Reef)—"Mercator"—"J. W." (Waterford)—"Shareholder" (West Chiverton)—"C. H." (Newcastle-on-Tyne).

## THE MINING JOURNAL.

### Railway and Commercial Gazette.

LONDON, FEBRUARY 1, 1879.

#### FOREIGN DUTIES ON ENGLISH IRON.

A short time since we drew attention to a petition forwarded to the Belgian Minister of Finance by the British Iron Trade Association relative to the duty charged on English pig entering that kingdom. It was shown that the duty of 2½d. per cwt. was not protective to Belgian ironmakers, for they cannot produce pig under the same favourable conditions as England and Luxembourg, so that the duty is actually a tax on the consumer and the trade. So it is not only English makers but the Belgian consumers and makers of finished iron that would be benefited by doing away with the impost. These facts were ably set forth by the Association, but it appears they have been ineffectual in obtaining the relief sought for, as the Belgian Government have addressed Her MAJESTY'S Minister at Brussels on the subject, declining most positively to entertain it. It is argued that it is only the duty now levied that hinders foreign pig-iron from taking a more and more preponderating place in Belgium. The time, too, is considered inopportune for taking any steps to render the position of native producers of pig-iron in Belgium worse than it is already, whilst the duty brings to the Belgian Treasury about 600,000 frs. a year, which would be lost if the memorial of the Association were agreed to. But it is overlooked that by allowing the finished ironmakers to purchase English pig lower than at present it would allow of their doing a much larger trade not only with England but with other countries as well, for finished iron may be considered as the staple industry of Belgium, for in 1877 it exported no less than 201,688 tons of it, England taking about 50,000 tons of its specialities. So the duty is to remain, not only to the loss of English makers of crude iron, but of Belgian manufacturers as well. In Germany, too, we find protection to native makers in the ascendant, and great efforts being made to keep out English iron. Some time since the British Iron Trade Association, through Her MAJESTY'S Ambassador at Berlin, endeavoured to get the duty off iron in that country as well, but of that there is not the slightest chance, for Lord Odo Russell, writing to the Marquis of Salisbury on the subject, states that there is a steadily growing agitation, not only of reimposing export duties on iron generally, but also of taking such measures as may tend in particular to exclude English competition altogether from Germany. His lordship also states that the Battle of Free Trade will be fought out in the next session of Parliament, and that a Free Trade Association for that purpose has been formed in Berlin. The committee sitting on the subject recommend a protective duty of 50 per cent., or 6d. on the cwt., and there is, we believe, every reason for believing that the recommendation will be carried out, seeing that it is one of Prince Bismarck's proposals, and he is powerful enough to carry it.

#### ECONOMICAL PRODUCTION OF GAS.

Of late there has been a good deal of discussion as to the relative cost of light by electricity and gas, and as cost will have a great deal to do with the light of the future, those interested in the existing system should endeavour to make it so that it will be taken in preference to that by any other mode. So long as gas can be produced and supplied to consumers considerably cheaper than the electric light it will maintain its supremacy; and there is certainly no reason why it should not be made at a much lower price than at present. But we are not aware that for many years past there has been any improvement made for minimising the cost of coal gas, although such could be easily accomplished. The best of coal, and the dearest as a matter of course, is purchased by the various companies at the present time, and as it has been for years past, in all probability from the time that gas came into general use. The consequence is that to ensure the usual 10 per cent. dividend the charge to the public is considered very high, and hence we hear that an electric light can be produced and supplied to consumers almost as low as the existing charge for gas. Under such circumstances gas consumers should put themselves in a position, by reducing their prices, if possible, to a point which would give electricity no chance whatever; and this, we believe, could be easily effected. This, we may say, was forcibly brought under our notice a few days ago by the manager of one of the largest and best known colliers in the West Riding of Yorkshire. He pointed out to us what had been done of late years in the utilising of the large quantity of small coal that is made in all collieries where the pick or machine are used. Not to very long since thousands of tons of slack were left in the working places of mines, because it would not pay to raise it to the surface, and, in fact, was almost given away to parties who would be at the trouble of carting it from the banks. But this is not now the case. Experience has demonstrated that small fine coal is better adapted for converting into coke than the very largest, and is even ground into powder before being put into the ovens; whilst the gases evolved from it are utilised for heating the boilers. If such can be done with slack or smudge, which instead of being a positive loss is made to pay, there does not appear to be any reason why gas could not be made from the same material.

In the South Yorkshire field the well-known Barnsley seam consists of several distinct layers of coal of different qualities. The top is known as the Day bed, then there is the Clay seam, the "hards," or steam coal, and at the bottom of all is what is known as the slotting coal, alike suitable for household or gas purposes. In the latter bed the miner has to "hole" at the bottom with his pick, and in doing so makes from 15 to 20 per cent. of small coal. It is this small stuff to which our attention was drawn, as being in every way adapted for gas-making, and as it could be bought in almost any quantity at a very low price there is no reason why gas should not be produced at about half its present cost, and so leave lighting by electricity a long way behind as far as cheapness is concerned. This small coal, or smudge, can now be bought at from 1s. 3d. to 1s. 6d. per ton, and when the gas was extracted from it the refuse would bring in a large sum, many times greater than the first cost of the coal. One ton would produce from 9000 to 10,000 feet of gas, and would give from 10 to 12 cwt. of coke. In addition there would be something like 14 or 15 gallons of ammoniacal water and 8 or 10 gallons of tar. If the coke only realised 10s. per ton, ammoniacal water 3d. per gallon, and tar 3d. per gallon, the actual cost of the fuel would be nil. By the utilising of this small and cheap coal gas could be supplied at a much lower price than at present, and we should say of equal quality. Were the cost to consumers reduced only one-third, then the various companies would be in a position to hold their own against any light whatever, and would also be able to maintain their ordinary dividends as well. Such, we are told, would be the result of having small coal instead of the large for gasmaking. The importance of the matter can scarcely be over-estimated, and it would certainly be worth the while of some of the gas companies to have it practically solved. Colliery owners, we believe, would only be too glad to furnish for trial as much small coal as would be required for experiments, so, if any of

the London companies should take the matter up, the only expenditure they would be called upon to make would be the cost of carriage from the collieries.

#### THE AMERICAN IRON TRADE.

While the English iron trade is a prey to continued and severe depression, it is not a little remarkable to find that American metallurgy has fully held its own during the past year, although, perhaps, prices have not been very remunerative. In spite of the difficulties resulting from the vast distances which have to be overcome in the United States, the production of pig-iron is still making progress, upon the whole, in the American Republic. The quantity made in 1875 was computed at 2,266,581 tons; in 1876 there was a decline to 2,093,236 tons; but in 1877 the production rallied to 2,314,585 tons; in 1878 it further expanded to 2,332,000 tons. The production of charcoal-made pig seems to be gradually declining among the Americans. Thus, while it stood at 410,000 tons in 1875, it fell to 308,649 tons in 1876; in 1877 there was certainly a recovery to 317,843 tons, but in 1878 the fall was once again severe—to 250,000 tons. On the other hand, the production of pig made from anthracite coal rose from 908,046 tons in 1875 to 1,039,000 tons in 1878; the production of iron made with bituminous coal also increased from 947,545 tons in 1875 to 1,093,000 tons in 1878. At the same time, all is not quite *en couleur de rose* among American ironmasters. If they are making a large and increasing quantity of pig, their means of production are still far from being utilised, and a considerable amount of capital must by consequence remain unproductive. At the close of 1878 there were just about 700 blast-furnaces in the United States, and of these no less than 440 were out of blast; at this rate the Americans are turning out about only one-third the quantity of pig which they could make. The only favourable circumstance of which account can be taken is the fact that while 440 furnaces were out of blast in the United States at the close of 1878, the corresponding number out of blast at the close of 1877 was 446, so that matters are, if anything, rather improving than otherwise. Of the furnaces out of blast at the close of last year no less than 152 were dormant in Pennsylvania. There were also 15 out of blast in New Jersey, 34 out of blast in New York, 17 out of blast in Maryland, 29 out of blast in Virginia, 17 out of blast in Kentucky, 16 out of blast in Tennessee, 18 out of blast in Michigan, 62 out of blast in Ohio, and 13 out of blast in Missouri. Of the furnaces in blast at the close of last year 24 were in New York, 123 in Pennsylvania, 42 in Ohio, &c. It will be seen that the iron trade still makes the best show at present in Pennsylvania, all drawbacks and difficulties notwithstanding.

One circumstance which affords substantial encouragement to American ironmasters is the fact that while the production of pig in the United States increased last year to the extent of about 7000 tons, the progress of the demand fully kept pace with the growth of the manufacture. Thus the stocks on hand at the close of 1875 were computed at 760,908 tons. At the close of 1876 the corresponding total had fallen to 686,789 tons; and at the close of 1877 to 612,351 tons. At the close of 1878 it had further receded to 516,000 tons. Comparing the returns for 1878 with those for 1875 we find that the production had expanded to the extent of 116,419 tons, while in the same period of three years the stocks held were reduced by 224,908 tons. It is thus shown that the annual demand for pig-iron in the United States has increased between the close of 1878 and the close of 1875 by no less than 360,327 tons. When we remember that these three years have formed a period of severe industrial depression throughout the world, the United States included, the result disclosed must be pronounced remarkable, and, from an American ironmaster's point of view, satisfactory. The progress indicated in the demand is probably attributable to the severe prohibitive duties imposed by the United States Congress upon foreign iron imported or attempted to be imported, and to the general development of American industry and American resources.

**HOYLAND SILKSTONE COLLIERY.**—By an unaccountable error in the Yorkshire Correspondent's letter in last week's Journal the name "Hoyland Silkstone" was inadvertently written instead of "Stanhope Silkstone"—the "Hoyland Silkstone" being a thoroughly solvent and prosperous company, and therefore being under no necessity to communicate with their creditors otherwise than in the ordinary course of business; whilst the "Stanhope Silkstone," to which it was intended to refer, is unfortunately in the position of having a winding-up petition pending and to be heard on Feb. 1. It is scarcely necessary to say that the "Hoyland Silkstone" have not and never had the slightest intention of calling together their creditors, and, in fact, are not in the slightest pecuniary difficulty. The Editor much regrets that so annoying an error should have occurred, but trusts that the fact of the name of Mr. Lodge being stated as chairman of the company was sufficient to prevent any reader having any dealings with the Hoyland Silkstone Colliery supposing that that company was intended to be referred to.

**VALUABLE DISCOVERY IN THE CUMBERLAND COAL FIELD.**—A discovery has been made by the owners of the Dovenby Colliery, near Dearham, Cumberland, of a very valuable seam of coal. It was determined by the proprietors last year to explore deeper ground, and a drift was started accordingly, and in a short time a small seam of coal was discovered. On the upper part of this seam was found what was considered a very poor quality of "rattler," which was banked out with other refuse. The manager began to suspect that the "rattler" answered well for fuel, for so soon as it was emptied out on the bank it was eagerly sought after and carried off, and acting on the hint thus accidentally supplied its properties were discovered. The "rattler" coal, which has never been previously seen in Cumberland, can be lighted with a candle, and burns with amazing rapidity and clearness, leaving behind scarcely any ash. It is affirmed that this quality of coal is being readily sold for making gas at 24s. per ton. The success attending the exploration of the Dovenby Colliery Company will, doubtless, induce other owners of collieries to make further research.

**GRAPHITE IN NEW ZEALAND.**—An important discovery of graphite has lately been made in the interior of Wellington Province, New Zealand, where large deposits are believed to exist, very pure in quality and compact in texture. A correspondent of the Colonies and India States that samples sent to the Colonial Laboratory have been carefully examined, and prove equal to the best "Cumberland lead," the deposits of which have proved such a source of wealth to this country. The importance of the discovery is enhanced by the fact that the presence of the graphite indicates the existence of coal of a quality superior to any yet found in New Zealand.

**AMERICAN ENTERPRISE.**—The trading enterprise of the Americans is becoming unpleasantly conspicuous. We have seen them delivering bales of calico in Manchester, sending consignments of locks to our own lock-making districts, and challenging our old industrial supremacy at home and abroad in a variety of other ways. We have not yet heard that they have begun to send coals to Newcastle, but that they may some day or other push their rivalry even to that point is by no means beyond the range of possibility. From Geneva the somewhat unexpected intelligence reaches us that "American coals are beginning to be sold in Switzerland." The fuel is brought by sailing ships from Philadelphia to Marseilles, whence they are taken by rail to Geneva, a distance of 217 miles, and, despite the heavy cost of transport, are delivered to the dealers at prices which enable them to sell at a figure slightly under that at which the produce of the French and German pits can be offered to the public. It is stated, moreover, that the American coals, besides being cheaper than the French and German descriptions, are very much superior in quality to them. Such is the information sent to the Times by one of its correspondents, and remarkable information it is. But the enterprise of our transatlantic kinsmen does not end here. They are pushing their locomotives as well as their coals into the heart of Europe. They have sent over to Switzerland an engine specially adapted for producing steam from the anthracite coal found in the Valais, and which Swiss and French locomotives as at present con-

structed are, it is stated, quite unable to use. The American invention is said to be an entire success, the engine "running with fuel which would bring the ordinary continental locomotive to a standstill." This means increased economy in the working of railways, and Swiss directors may be expected in future to take a kindly interest in those who have furnished them with so valuable a means of reducing their outlay.

**RAILS.**—The following figures show the exports of rails during the period named:—Iron rails, 1877, 177,852 tons; 1878, 110,687 tons. Steel rails, 1877, 235,458 tons; 1878, 249,882 tons.

#### GREAT DISCOVERY IN STEEL MANUFACTURE.

THE CONVERSION OF CLEVELAND IRON INTO STEEL—THE PROBLEM SOLVED.

To all who have accurately observed the course of events in connection with the iron and steel trade for the past few years it must be obvious there is springing up a decided preference for steel to iron, and the conclusion must necessarily have been drawn from this fact that in most of the branches of manufacture for which iron is now chiefly employed the former metal is destined completely to supersede the latter. But the main difficulty in the way of the realisation of such a result has been the great cost of the production of steel as compared with that for producing iron. This has been consequent on the fact that it has been hitherto found impossible to eliminate, except by means which were financially impracticable, the phosphorus and sulphur which prevail to a large extent in most of the iron of this and of other countries. Through these circumstances the steel trade has hitherto been almost entirely monopolised by the Furness and Cumberland districts, where a class of ore is obtained free from phosphorus to such an extent as to be no detriment to the production of steel of a high quality—an industry which through the application of Bessemer's timely discovery was the means of rapidly developing the town of Barrow into such a remarkable state of prosperity. The ironmasters of Cleveland soon discovered that the success of the western districts in steel making had materially affected their interests, and a stronger incentive than ever was, therefore, imparted to their endeavours to discover the secret of converting Middlesborough iron into steel at a cost which would make the manufacture remunerative. The abstraction of the phosphorus and silicon by some practicable process seemed the only thing necessary to enable them to compete with Furness and Cumberland, if not to drive them completely out of the field, Middlesborough having advantages over them in the quantity of ore and proximity of coal. For some years both prior to and subsequent to Bessemer's invention persevering exertions have been made by Mr. I. Lowthian Bell and others which are now being continued at the Port Clarence Works, concurrently with experiments at three Middlesborough establishments—the Acklam; the Erismus; and Messrs. Bolckow, Vaughan, and Co.—for the elimination of the obnoxious elements. Mr. Bell's endeavours resulted some time ago in success in a chemical, though not in a financial, sense; and many have since been pursuing the subject, and we have now to announce that success has at last been obtained, and the conversion of Cleveland iron into first-class steel at a moderate cost is at length an accomplished fact.

The inventor who has achieved this result is the late Mr. Perry Downing, of Newcastle, formerly the owner, with Mr. Alderman Robinson, of the Redheugh Steelworks. Mr. Downing had the reputation of being one of the first manufacturers in the county of the articles he produced, but the material he was compelled to use was steel from Hindostan and elsewhere, only obtainable at considerable expense. He accordingly directed his attention to the expulsion of phosphorus and sulphur from Cleveland iron, with the view of obtaining steel at a lighter cost, and ultimately succeeded. He then provisionally protected his invention, but died before completing the patent. His son, Mr. J. P. Downing, of Gateshead, and Mrs. Downing, his widow, assigned a large portion of their interest in the invention to Mr. Harrison (of Messrs. Harrison, Ainslie, and Co.), Mr. T. E. Jones; Mr. J. H. Garbutt, of Darlington; Mr. A. Mau, of Newcastle; and Mr. T. Mc W. Wilson. The patents have since been completed in England, France, Belgium, Germany, and the United States, and steps will be immediately taken to commence the manufacture of the steel in Middlesborough, and in the various centres of the iron trade throughout Europe and America. Two remarkable advantages possessed by the new patent are that it applies to the manufacture of steel not only from Cleveland iron but from all other irons in which similar objectionable elements exist. To those it provides for the manufacture of refined iron also; the former process being in fact virtually a continuation of the latter.

In the first place, a suitable furnace or cupola of any description the lining of which would be capable of resisting a high degree of heat is requisite. The pig-iron or ore, if of poor quality and injuriously contaminated by the presence of simple elementary bodies, must be placed in the furnace or cupola, and to every ton of pig-iron is added 1 cwt. of iron of the best description, such as charcoal iron, from 25 to 65 lbs. of scoria from puddling or mill furnaces, also 100 lbs. or thereabouts of scrap iron. These are melted together for about half an hour, the furnace being run at such a temperature as will melt cast-steel. When the iron is perfectly fluid the heat is continued for about two hours. The metal is then drawn off, and it is now found that it has become perfectly refined iron. The best quality can be made, if necessary, by the use of larger quantities of superior iron than those previously stated—by mixing with the poor iron twice or thrice the quantity of the superior kind than before specified, but for the generality of purposes the quantity first mentioned will be found sufficient. The chief merit, however, claimed for the invention is the manufacture of steel—in the furnace or cupola—from poor pig-iron, as well as from the red oxides of iron or the iron ore, at one single operation, such result being obtained by in the first place refining such iron or iron ore, and then, by the addition of nitrogenous or other compounds, converting the same at one smelting into genuine steel ingots, having such properties as enable them to be manufactured into bars, plates, rails, cutlery, tools, &c. To effect this the following is the plan adopted. In a furnace or cupola, such as that used for producing the refined iron, is placed about 1 ton of poor pig-iron, such as that of Cleveland, with 25 to 65 lbs. of scoria and about 100 lbs. of good scrap. When these are melted the furnace is run to the heat at which cast-steel melts, and this heat is kept up for about 30 or 40 minutes. The scoria by this time has floated to the surface, carrying with it all the impurities which have not been volatilised, and this is tapped off. From 25 to 65 lbs. of hematite, with 3 ozs. of black oxide of manganese, is stirred into the incandescent mass, and from ½ lb. to 3 lbs. of chloride of ammonia is introduced. The furnace or cupola is now run again about 30 minutes, when about 100 lbs. of spiegel-eisen are added, the whole mixture being immediately stirred once or twice. Great care is taken not to puddle or boil the iron, and this is a most important feature of the patent, as it is by dispensing with puddling, which is a most expensive process, that the patentees are enabled to make refined iron and steel at the reduced cost. Next, the contents of the furnace, when at a great heat, are run off into ingots ready for use, and the manufacture of the steel is completed.

The production of refined iron and steel is effected by vapourising injurious elements, by great and varying degrees of heat, in one single furnace operation, and by the use of the ingredients named, in the peculiar and particular manner in which they are employed, the chemical combinations acting and reacting upon each other in such a manner as to liberate detrimental bodies, and, by a species of synthesis, to introduce nitrogen into the iron, and thereby complete its conversion into steel. With regard to the quality of the steel produced, we may say that specimens have been submitted to several competent authorities, who have pronounced it to be excellent, and a number of tests have been employed, yielding favourable results. The new discovery, indeed, seems to have finally solved the problem of the conversion of Cleveland and all other iron of like quality into steel, and to be calculated to bring about a complete revolution in the iron and steel trades, on account of the extraordinary reduction in price at which by means of the invention steel can be manufactured. A considerable impetus will now be given to that com-

plete substitution of steel for iron, while Middlesbrough will be brought most forcibly into collision with Barrow and Cumberland. It is thought that the invention is likely to influence the depressed commerce of the country; should the practical application of it prove successful it will, it is thought, contribute in a large measure to bring back activity to the iron and steel trades of Great Britain, and it is hoped that the results will be commensurate with the anticipations entertained of the invention.

#### REPORT FROM CORNWALL.

Jan. 30.—The Cornish Bank difficulty has had what we may fairly call a very gratifying solution; the result, indeed, is such as none but the most sanguine could have anticipated, and very few even of them. Cornwall in its banking disaster compares very favourably with all its companions in like misfortune. The revelations at Glasgow are, perhaps, the greatest scandal to our commercial morality of which, all things considered, we have ever heard. The Rochdale Bank has made a hopeless failure. The West of England and South Wales has been brought too low by the collapse of the chief industries of South Wales not to render the calamity there more complete than was at first anticipated. The Cornish Bank stands out in bright relief when compared with either, for although in the Glasgow Bank the bulk, and in the West of England the whole, of the liabilities will be paid, this result will be attained by screwing out the utmost from a wide area of liability, and producing almost equally wide-spread disaster. The loss in Cornwall, however, is comparatively small, and so distributed that it will be little felt, as a rule.

When the creditors of the bank met on Tuesday it was found that rumour had overstated the liabilities and underestimated the assets. The bank owed under half a million—£53,987.—and the assets were estimated at £399,416.; the deficiency, therefore, was about £54,500. Messrs. Tweedy were thus enabled to offer 16s. in 1l., which with a further dividend of 1s. in 1l. offered by Lady Williams on behalf of the estate of Sir F. M. Williams, will make the total dividend 17s., and thus reduce the actual loss to 3s., which will total up as nearly as may be to the amount of deficiency as shown in the balance-sheet. Terms like these were, of course, certain to be accepted; and it is very satisfactory to find that in the hour of trial Messrs. Tweedy have continued to preserve the respect and esteem with which they have always been regarded. As Mr. T. S. Bolitho said, although it might transpire that they had not always acted with entire discretion, they had never done anything to forfeit the character of honest men.

We may hope now again to see some little improvement set up locally to aid the effects of the improvement in mining matters which is setting up outside. The effects of the failure have, however, been too serious to be all at once got rid of, and though confidence may be regarded as restored, the natural course of business has been so far interfered with that it must take time to recover. Nevertheless improvement is being manifested, and we should not be surprised to hear that the tin standards had been again put up, or rather put back to the point at which they stood when the year commenced, and for which there seems really to have been no adequate reason—considering the margins the smelters secure—for removing them. The only excuse was the failure of the Cornish Bank, and the uncertainties it might involve, and now we know the worst here, and that the worst is by no means what was feared, matters ought to be restored as speedily as may be to their former footing.

It may be a good sign when adventurers quarrel about small matters, because it should indicate that there are no really important points in controversy. It is not at all pleasant or satisfactory, however, to see the continual manifestation of such a petty litigious spirit as was displayed at the late East Pool account, and as we are too much accustomed to note at sundry other mine accounts. There is no reason why a mine meeting should of necessity be reduced to a condition of a "bear-garden" by squabbling over matters which are neither worth attacking or defending, such as the co-chairing of the Chairman at East Pool. Independence of character is all very well, and nobody can object to the defence of the rights of the shareholders, but when this is the disposition to perpetual fault-finding which (possibly with the best intentions) some of our mining friends display, is it any wonder that needless friction is introduced into the conduct of mining enterprise, and that a damaging effect is created at a distance? More harmony and goodwill in the conduct of mining affairs would be worth even one or two rises in the standards. We are glad to see that East Pool is about to obtain a boring machine. That is practical.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Jan. 30.—There is no increase in the business doing at the finished ironworks or at the blast-furnaces. One or two important finished ironworks that have been idle since Christmas have now resumed operations, but otherwise things are little altered. Belgian and German iron is being used up in this district by several manufacturers, and this competition is not without its influence in keeping down prices. The German product is not equal in quality to Staffordshire "marked" iron, still it is being employed where before native high class iron was bought. The furnaces blowing in this district are being yet further reduced in number, for Messrs. John Bradley and Co., of Pensnett, near Dudley, have blown out their last furnace; thus the furnaces blowing have been reduced to twenty-five. The colliers of the New British Iron Company, Congreaves, steadily resist their masters' terms. Some three weeks before Christmas the whole of the men, numbering some 800 or 900, were discharged, and the manager, it is understood, is now willing to re-employ them if they will consent to work more than the present eight hours. Although they would doubtless receive extra wages, yet the miners have resolved not to submit to any departure from the present short-hours system, and so they are still without work. Up to the present the men have been partially supported from out of the funds of their local Union, and each man received 5s. a week, but now the whole of the men in South Staffordshire are being asked to make levies on their behalf.

The annual meeting of the Iron Trade Wages Board was held in Birmingham on Tuesday. Mr. Joseph Chamberlain, M.P., reviewed the proceedings of the past year, and contended that the existence of the Board had prevented serious strikes. The best evidence of the advantages of such boards was that out of 160 strikes during the past year, and all of which had been unsuccessful, there had not been a single strike in the iron trade. He had had to decree three reductions in wages, but the state of the trade justified such a course, and but for the Conciliation Board the masters would have enforced further reductions. Every reduction in wages and other saving went to benefit the consumer. The fear of foreign competition in the iron trade was, the President thought, greatly exaggerated. The question of the reduction of puddlers' wages to 7s. instead of 7s. 6d. per ton, brought about by reason of the smaller weight necessary under the new Weights and Measures Act, was next brought before Mr. Chamberlain. The men strongly opposed the alteration. The umpire said the men wanted what was equivalent to an advance of 1-15th in wages, and he gave an award in accordance with the masters' request.

An examination for managers' certificates of competency under the Mines Regulation Act was held in Wolverhampton on Tuesday and Wednesday. There were eleven candidates; six of them live in the district, and the others in the respective counties of Northumberland, Lancashire, Yorkshire, and Derbyshire, and in North Staffordshire. This is a much smaller number than usual. Dr. A. Bostock Hill, of Birmingham, examined in chemistry and ventilation; Mr. Josiah Davies, C.E., Wolverhampton, examined in mechanical engineering; and Mr. D. Peacock, West Bromwich, examined in surveying and practical mining. These gentlemen were assisted by Mr. W. Blakemore, of Wolverhampton, the secretary. In a week or two the Home Secretary will have allotted the successful candidates their certificates.

Mr. J. W. Daniell submitted by auction, at his sale rooms, Corporation-street, Birmingham, a number of shares in local banks, and also in the Small Arms and Metal Companies. The first lot offered

comprised 53 shares in the Birmingham, Dudley, and District Bank, and were sold with option to buyer to take a limited number or the whole. The first bidding was 14l., and went up to 15l. 5s., at which price the buyer cleared the lot. The next lot, 24 shares in Lloyds Banking Company (Limited), started at 22l., and were sold at 24l. 7s. 6d., and all taken by the first buyer. The next lot, 6 shares in the Birmingham and Midland Bank, were sold at 81l. 12s. 6d. 39 shares in the Birmingham Small Arms and Metal Company, (Limited) were started at 20l., but there being no second bidding they were withdrawn.

The North Staffordshire coal and iron industries are without change upon the week.

The colliers at the various pits in the Silverdale district, North Staffordshire, have received notice of a 10 per cent. reduction, with an intimation that it will certainly be enforced. The men have resolved to ask their employers to lower their demands.

**SOUTH STAFFORDSHIRE COLLIERY COMPANY (Limited).**—A petition for the winding-up of this company by the Chancery Division of the High Court of Justice has been presented to the Lord Chancellor by Mr. C. Ismay Colton, of Dowgate Hill, London, accountant, a creditor of the company, and the petition is directed to be heard before Vice-Chancellor Sir Charles Hall on Feb. 7.

#### REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Jan. 30.—Things had a very quiet look in the Llanrwst mining district to-day, the more so on account of the frost, which stops outdoor operations. Looking from an eminence over portions of the lead mining region one sincerely wishes that some of the mines may turn up trumps. It is getting time. My first visit to the district dates between 20 and 30 years back, and I fear I am right in saying that more gold has been carried into the region by far than derived from it during the intervening years. Still it is never too late to mend, and with the importation of new inventions, new capital, and new intelligence we may hope for something before long.

There is a little revival in gold mining in the Dolgelly district lately. Clogau, as we have seen in the Journal, has steadily improved of late, and the veteran gold miner and mineralogist, Mr. Readwin, is said to be again in the neighbourhood of Dolgelly.

A movement was started some time ago for washing the alluvium of the valley of the Mawddach. It promised well, and the proportion of gold to the cubic yard of alluvium was said to be worth 7s. 6d. This amount would speedily make the fortune of a Californian or Australian hydraulic miner, and it is difficult to understand why the undertaking has been brought to a standstill. I am sure that with economic and well directed mining gold mining in Merionethshire may yet pay.

Dr. Callaway, of Wellington, Salop, lectured before the Chester Society of Natural Science on Thursday evening last, "On the Foundation Rocks of Britain." I do not think that the study of the isolated bosses of old rocks that protrude through the Shropshire Plain, and to which the Doctor has been directing his attention, is at all the sort of study to qualify a man to speak with authority on this subject. What we want first is a careful investigation of the great mass of rock that rises up from beneath the Carnarvonshire slate and if possible to find out what lies under that. Next, we want a careful examination, bed by bed, of the Cambrian rocks of the Merionethshire Anticline as they rise up from the wild moorland stretching from Trawsfynydd to Cefn Cam, and which form the magnificent escarpments of Rhinog Fawr, and Fach, and Llawlech. The Government Survey have done this generally, but they have not added much to what old Sedgwick told us years before. We want more detailed information, and then a careful correlation of these rocks with the easternmost outcrop of this vast series of beds in the Longmynd, in Shropshire. Until Dr. Callaway has done this, and I do not think that he has as yet, he is hardly prepared to interpret the "Foundation Rocks of Britain."

The railway which is now in course of construction from Bala to Trawsfynydd will open up the northern end of the district I have just referred to, and possibly, when the present scare in the slate trade is passed, some one may turn his attention to the discovery of slate beds in this region, which should correspond to those worked at Bethesda, Llanberis, and Nantllef.

The manifesto published by William John Parry, the president of the Slate Quarrymen's Union, and to which reference was made in last week's Journal, is a pattern of moderation and good sense. Its advice to the men is well summed up in the three sentences with which it concludes—"Be respectful to your superiors. Be faithful to each other. Be true to your principles." It is stated that the immediate cause of the manifesto is the fear that some of the masters, particular mention being made of Mr. Smith, of the Dinorwic Quarries, are about to take undue advantage of the men in their present necessity. This would indeed be a pity, and an ungrateful reward for the moderation and good sense with which the men have carried themselves in the good times just gone by. Both the masters and rulers of a wider sphere may profitably ponder Mr. Parry's words—"Nothing is really gained to the side that depends upon its strength alone to carry out its purpose."

I suppose it is convenient to speak of "Welsh granite" and "granite quarries," but the truth is there is not a granite quarry in North Wales. The sett and stone quarries are worked for the most part on the greenstone that lies at the base of the Arenig, or Lower Llandulo rocks. They are important quarries, and they are not confined to the shores of Carnarvon Bay. Some of the best of them are situated near the town of Portmadoc. One worked, I believe, by a private firm—Messrs. Slutchbury and Heathcote—contains about the best stone for the purposes such stones are applied to in North Wales.

Reductions of wages and extension of working hours have been submitted to at most of the collieries and works in the district from which I write, but there is great scarcity of employment for men willing to work.

#### TRADE OF THE TYNE AND WEAR.

Jan. 29.—The house coal trade continues to improve, the severe and long winter having stimulated the demand both inland and coastwise. The demand for gas coal also continues fair, but for furnace coal and coals for general manufacturing purposes the demand is certainly still deficient. In Northumberland the coal trade has undergone a wonderful improvement since our last report, and at a number of the largest collieries in the county full time has been wrought. At the commencement of the year it was expected that trade would somewhat revive, and the prospects in this county are now brighter. At Shiremoor a commencement has been made after being almost entirely idle for the past six weeks. There is little report in the way of change in North Durham. The stoppage of the Ferryhill Ironworks has been the great feature of the week, as it will, it is supposed, close Thrislington Colliery, where a large number of hands are employed, but a strong hope is felt that the change of management that will take place with the introduction of the official liquidator will be the means of starting not only the ironworks but also the collieries at Thrislington and Coxhoe. Notwithstanding several stoppages in North Durham, there is a decided feeling of hope throughout the district that an improvement of trade is on the eve of setting in. In Durham the existence of the Miners' Association and also the Coalowners' Association is being ignored by the colliery owners who are not members of the Association, and masters now prefer to deal direct with their own men themselves. Indeed there are not wanting signs of the breaking up of the union organisation as the men are unable to contribute sufficient funds to meet the constant demands made upon them. It is plainly intimated in a circular lately issued by the executive of this Association that their funds are at a very low ebb, and that shortly an extra levy must be made on the members. It appears also that the funds of the society are fast disappearing before the constant demands made by men whose claims for relief are considered doubtful. The wages at present in Durham have reached about the level of 1870 and 1871, generally speaking. And as there are 6000 to 7000 miners at present out of employment in the county, it will be vain

for the men to attempt to resist proposed reductions at works when this general level has not been reached.

The Chemical Trade on the Tyne, on the whole, shows some signs of vitality. A considerable demand for most kinds of chemicals is apparent, and stocks are certainly light. The exports of alkali in 1878 were slightly less than those in the year previous. In 1878 they were 282,351 tons, and in 1877, 284,289 tons. A steady demand goes on, and any increased inquiry causes increased demands from sellers in rates. It is expected that any return to prosperity in trade generally will be felt, particularly in the chemical trade.

The iron market at Middlesbrough on Tuesday was much quieter than last week, the absence of the excitement then noticeable on account of the failure of the Rosedale Company being very evident. The nominal quotations of makers do not show much alteration, but prices are weaker, taken as a whole, the highest quotation for No. 3 being 34s., less 1 per cent., whilst sales have been made at 33s. 6d. net. No. 4 forge is 6d. less than No. 3. Stocks generally are increasing, and 1100 tons increase on the week is shown in Connal and Co.'s stores, whose stocks of Cleveland pig are 71,000 tons. Merchants are doing most of the trade at lower figures than makers. The shipments of iron, owing to the severe weather and other causes, have been kept low. Especially has this been the case to Scotland, the deliveries from the Tees last week not being half what they were in the corresponding week of the previous year. This arises to no inconsiderable extent from the Scotch canal being blocked with ice. Iron forwarded has, therefore, to lie at the port of debarkation. The foreign deliveries have not been equal to the average. It has now been determined that the remaining five furnaces of Thomas Vaughan and Co. will be blown out, which will materially reduce the make of pig metal, and improve the position of the trade. The extension of steel manufacture from foreign ores is likely to be increased in the North of England district. Two or three works are meditating the introduction of this class of industry if the railway company will afford facilities, which the company seem inclined to do. The company appears to be more ready to afford concessions in these hard times if a good case is made out than in the inflated period of five years ago. The interests of the railway are largely bound up in the prosperity of the district, and it is, therefore, satisfactory to see that the directors are more ready to do what they can to stimulate local industry in the iron and steel trades, which have been in the past such a large source of income to the railway company. The stoppage of plate mills at the works of Hopkins, Gilkes, and Co. is due chiefly to the want of specifications, and will be only of a temporary character. Other plate manufacturers are frequently in a like position. Plates are 5l. 10s.; common bars, 5l. 2s. 6d.; angles, 5l. 5s. There is a lack of demand for bars and angles. The engineering trade is rather slack. An endeavour is being made to get the difficulty relating to the shipbuilders at Messrs. Dixon's arranged.

A number of gentlemen connected with the various coal fields will be in Newcastle, on Feb. 15, to discuss an important paper in reference to safety-lamps at the council meeting of the North of England Institute of Mining and Mechanical Engineers, and it has been decided to postpone the general meeting until that day, in order to allow these gentlemen to take part in the proceedings, which will be of more than ordinary interest. The following papers will be open for discussion:—"An Account of Some Recent Experiments with Coal Dust," by Messrs. A. Freire Marreco and D. P. Morrison; "On a New Method of Detecting Small Quantities of Inflammable Gas, and of Estimating the Proportion Present," by Mr. E. H. Livinge.

At the Cleveland Institution of Engineers on Monday, Mr. Shoolbred, M.I.C.E., London, read a paper on "The Electric Light," in which he advocated its future adoption privately and publicly. The subsequent discussion showed a variety of opinion, several of the members believing the invention was not sufficiently under control, and too expensive for domestic use; others believed that that was the case for use even publicly under the existing stages of experience.

**LEAD MINING IN TERESDALE.**—During the last few months the directors of the Green Hurth Lead Mine have been putting down a sump close to where the No. 1 vein was so rich four years since. A month ago the men cut a branch of the vein worth 1 ton of lead ore per fathom, and a fortnight ago they found the vein itself leading into the sump. They had not yet seen the whole width of the vein, and at present it is worth 12 tons of lead ore per fathom. The sump is still in hazle. It is down 10 fms., and is now within 6 ft. of the limestone, in which rock it is expected the vein will be even richer than it is at present. When this mine was so rich four years ago the ore was nearly all obtained from a limestone averaging 4½ fms. in thickness. As soon as the present sump is sunk through the limestone workings will be commenced north and south on the vein under a back or cover of 16 fms.

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

Jan. 30.—Very little change has taken place in the state of trade since last report, so that there are still a considerable number of unemployed workmen in connection with the ironworks in Derbyshire and Yorkshire. In the former county the collieries have been working very well, owing to the demand for house coal being brisk, but for other qualities there is not much enquiry. The London trade has been better than usual, and a heavy tonnage of coal has passed over the Midland from Clay Cross and several other places. But prices have not materially improved, although they are higher to the consumers than they were during the last quarter of 1878. Steam coal does not go off at all well, and the same may be said with respect to engine fuel. The make of pig has been kept up to the average, but the business doing is of a moderate character, whilst the rates at which it has to be sold makes the trade anything but remunerative. At the foundries business remains much the same as it has been for some time past, there being a less number of hands employed than formerly, and the prospects of improvement are by no means bright.

In Sheffield there has as yet been no perceptible decrease in the number of men unemployed, and although more than 10,000 have been subscribed for the relief of the workmen and their families that sum will be considerably below what will be required, so that renewed appeals have had to be made to the public, and so far they have been well responded to. Some few branches of trade are decidedly better than they were a month ago, but still there is more foreign competition than formerly, especially in inferior cutlery and springs. The heavy departments are still very quiet, and some of the mills are not running so well, although some few orders have been given out for plates. There is enough doing in Bessemer rails to keep the men fully going, but it is principally in completing orders that have been some time in hand. In ordinary cast-steel the trade is still quiet, Bessemer replacing it for some descriptions of material. Some of the cutlery houses have been more fully employed than they were in orders for the home markets. Australia and some other of our colonies are beginning to send in some more orders for different descriptions of goods. Heavy plates are in but moderate request, and no improvement has taken place in the engine and machine branches.

In South Yorkshire the Coal Trade has been tolerably good, so far as regards "softs," but in other qualities there is not much doing, but the men are well employed notwithstanding. The wages question is to be referred to arbitration, but not on the basis proposed by the men, which was that the books of the colliery owners should be examined to see the price at which they sold their coal several years back, and the difference in the then and the present prices. This was a proposition that could not be seriously entertained by the colliery owners, so that the arbitrators will be left to agree to a basis on which to come to a decision. The men, in the first instance, fought strongly against arbitration, but a majority of the lodges accepted it, after holding several meetings. The result is that the matter will be allowed to stand over for a month, at the end of which time the decision of the parties appointed as arbitrators or the umpire will be given. At some places, however, the men have had notice that a reduction will be enforced independent of arbitration. At one place a number of the men have agreed to a reduction of 5 per

cent., and at another 12½ per cent. is to be deducted, or the men to take the usual notice.

The explosion which took place at the Fitzwilliam Hemsworth Colliery has resulted in the death of four men. The seam of coal in which the accident took place is a thin one, as a rule giving off very little gas, so that naked lights were used. The coal, however, was brought down by blasting, which has been discontinued in most of the collieries in South Yorkshire working the Barnsley and Silkstone seams.

I regret to find that in my last week's notice, in alluding to the calling together of the creditors of the Stanhope Silkstone Colliery Company, I unintentionally put the word "Hoyland" instead of "Stanhope." That the word was written inadvertently would be gathered from the fact that it was also stated that Mr. Lodge was the Chairman of the company, as he is of the Stanhope Silkstone. Of the Hoyland Silkstone it may be said that it is one of the finest, as it is about the deepest, colliery in the West Riding, owned by a wealthy proprietary, and in full operation, having last month sent 2580 tons of coal to London alone.

The Thorpe's Gawber Hall Colliery Company half-yearly meeting is to be held in London; it is convened to consider the financial position of the company, and authorising the raising forthwith of not less than 10,000*l.* by mortgage, or by the issue of debentures, or of preference and ordinary shares, or otherwise as may be determined; for the purpose of giving to the directors such powers and authorities as may be thought desirable for disposing of part of the business, estate, and effects of the company, and for carrying any such disposition into effect.

#### REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

Jan. 30.—Since my last report, the jury who have been engaged 25 days in considering the Abercane explosion have given their verdict. It was an open one, and as such was what had been generally expected would be given. It seems a pity that they did not add that there was no cause to blame any of the colliery officials. The evidence of Mr. Cadman (Inspector of Mines), Mr. Bain (Deputy-Inspector), Mr. J. Higson (consulting engineer of the Ebbw Vale Company), Mr. Jordan (mineral agent) and others pointed to no neglect on the part of Mr. Pond, the manager, or any other official. It was a foregone conclusion, as is usually the case in accidents of this kind, that the cause of the explosion could not be discovered; those who know anything of such matters are generally the first launched into eternity. It is conjectured, however, that a sudden outburst of gas took place. With regard to the Dinas Pit nothing particularly fresh has occurred. No bodies have yet been reached, and it is probable that some of the evidence given at the inquest may be of a somewhat curious nature.

The Alexandra Dock Company, Newport, have already successfully adopted the use of the electric light at their property. There are two lights so arranged as to illuminate at will any portion of the dock. Of course this will ensure night operations being carried on in the same ease as in the day. The process used is Siemens. The Chairman of the company is Lord Tredegar; the vice-chairman, Sir George Elliott, Bart., M.P.; Mr. Parkinson, managing director; and Mr. Snape, engineer.

It has been resolved to reconstruct Richards and Co. (Limited), and as soon as the necessary forms in Chancery are complied with it is understood that operations will be resumed.

At the Tredegar Police Court William Phillips and David Waters (colliers) were fined 40*s.* and costs, or one month, for taking a quantity of loose powder in a pit at Victoria, the property of the Ebbw Vale Company.

The Rhymney Railway Company are about to declare a dividend at the rate of 8 per cent. for the half-year ending Dec. 31 last.

So far as the iron trade is concerned, there is no change of importance to note. Prices have not in the least degree improved, and unless some change shortly takes place one will probably see other companies going to join the "great majority" of concerns who have been obliged to figure in Chancery. The Landore (Siemens) Steel Company has been wound up compulsorily, which was the best course to be taken, and was approved by all parties. There is a heavy debenture debt; but no doubt the company, which executes large Government contracts, will be reconstructed. Dr. Siemens believes that the works can still be carried on profitably. The demand for railway iron is scarcely worth alluding to, and bars are not at all in active request. Clearances are still rather small. Steel rails in moderately good request.

As for tin-plates, there is little or no change to report. The men who were summoned for leaving work without notice at the Penclawdd Works have returned to their employers, but have been fined 1*l.* and costs each. Notices terminating contracts have been posted at the Pentrych, the property of Messrs. Booker and Co. (Limited).

The Blaenavon colliers still persist in refusing to accept a reduction of 10 per cent. in wages. The same course has been taken by the Aberdare and Plymouth men, but in this case they agree to give a day each month. It would not be surprising any day to see the Blaenavon Works closed, as the men are only working on a 24 hours' notice. In the case of the Plymouth and Abernant colliers the company threaten to close their pits unless their terms are accepted. The demand for steam coal is fairly brisk, and shipments are about up to the average. House coals are moderately well enquired for, but of all qualities the output is very large. Prices are unchanged. Patent fuel is still rather dull.

In the Court of Appeal, on Wednesday, the Master of the Rolls ordered that the appeal in regard to the affairs of the Dynevor Dyffryn Company, by Alexander Adamson and others, should be removed from the final list, and set at the head of the interlocutory list for Wednesday fortnight.

#### GOLD SANDS AND THEIR TREATMENT.

An interesting paper has recently been read before the Californian State Geological Society by Mr. Melville Attwood on "Gold Sands," in which he pointed out the probability of petroleum being made available in the smelting process. A few months previously Mr. J. H. Godfrey had read a paper on the "Geology of Japan," wherein he said—"About two-thirds of the whole production of iron in Japan is derived from the treatment of the sand of magnetic iron ore. The principal deposits of this iron sand are found along the eastern and southern shores of the main island (Nipon), and usually they appear to have been derived from the decomposition of the neighbouring granitic rocks." In another place Mr. Godfrey also said—"Sand of magnetic iron ore undoubtedly derived from the adjoining volcanic and metamorphic rocks is frequently met with along the sea-shore, and largely used for manufacturing an excellent quality of iron, as, for instance, at Nakayama, Province of Gushin." Having these facts in his mind Mr. Attwood suggested to Mr. Eames to make a trial of the magnetites in the Californian gold sands which are to be found on the Pacific Coast, the condition of such ore being in Mr. Attwood's opinion well adapted for the flame of petroleum, in connection with the use of which Mr. Eames possessed a patent. A trial furnace is now being erected at Old Saculito, Marin County, California, and Mr. Attwood feels sanguine as to the results. He does not doubt that Mr. Eames will be able to manufacture the shoes, dies, &c., required for our quartz mills direct from the ore. If the ore is obtained from our gold sands \$2 per ton should pay for concentration, leaving the gold for profit. Manufactures of this kind, giving employment to so many, ought to receive every encouragement. The fuel and ore exist in abundance on this coast, and also the best market for the manufactured article, which in reality only requires labour to produce it.

A number of samples of sand have been obtained by Mr. Attwood from the beach near the Ocean House. The first he tried yielded at the rate of \$5 per ton for gold, and contained about 25 per cent. of magnetite, with some chrome. The other gave about 50 cents per ton for gold, and from 12 to 65 per cent. of magnetite. The concentration, he imagines, would be a very simple affair, but the ore should be made as clean as possible, and ought to contain at least 90 per cent. of magnetite. Two of Brunton's ore dressing frames would,

he thinks do the work of concentration very well. The prepared canvass of the first frame should revolve more rapidly than when used in dressing lead ores, and have a slight percussion movement added to it, the strength of the blow from which ought to be so arranged that the person attending the frame could vary it to suit the work. The second frame should have the prepared canvass covered at intervals with silvered plates, and be worked slower than the other frame, and so placed that the partially dressed ore from the first could pass over it. In case the sands to be treated should be very poor they could be passed through a tye-buddle, and only the heads, or what is collected in the upper end of the tye, be put through the frames.

Mr. Attwood exhibited drawings of two gold-washing machines which were used 20 years ago, with direction of how they were worked; also a diagram and description of Brunton's ore-dressing frame, published in the London Mining Journal in 1846, and one by himself for treating lead and copper, also published in the London Mining Journal in 1843, and one cut out of the Mining Press, of San Francisco, of the previous week.

The use of petroleum as a fuel bids fair, Mr. Attwood thinks, to revolutionise all their smelting operations, and it will not be long before it will take the place of coal in the treatments of copper, silver, lead, and other ores, even in the calcination and distillation of zinc; but by far the most important will be in iron making, particularly in the puddling furnace. Where a constant and high temperature under perfect control is required, it will take the place of everything else—indeed the only limit to its use, he thinks, will be its cost.

#### DON PEDRO NORTH DEL REY.

TO THE EDITOR OF THE MINING JOURNAL.

SIR.—Foreign mining operations are again becoming popular, and, as the market has gradually been purging itself of the majority of the unsound enterprises which exhausted its energies, confidence in such investments has increased correspondingly; indeed, at the present moment it would be difficult to say what class of investments meets with a greater share of public favour, or offers more security to investors. The above-named property bids fair to equal in its success any like undertaking hitherto before the public. It is only some few years back that this mine was making a profit of from 8000*l.* to 10,000*l.* per month, and, judging from the reports of the past few months, I think I am fully justified in expecting equally prosperous returns are in the near future. The opinion of each and all of the past managers of the mine has been that, could the deepest sections be drained, the realisations would be even more brilliant than any previous success. The present manager, Capt. Joseph Vivian, while endorsing the aforesaid, has even affirmed most positively that the mine only required draining in order to resume handsome dividends; and other eminent authorities—men with a knowledge of the country and the property—prognosticate 100 per cent. in dividend when this result is attained. This end has been reached, and during the present year the shareholders in this company may be rewarded for their patience. GOLD.

#### PETROLOGY—THE STUDY OF ROCKS.

It is difficult to offer the practical man any greater inducement to study a subject systematically than the proof that he will be able to turn the knowledge acquired to pecuniary advantage; Mr. Rutley may, therefore, be congratulated upon showing in the first chapter of his Study of Rocks\* how petrology may be utilised. That the work is thoroughly reliable may be assumed from the circumstances that Mr. Rutley has not only availed himself of the best continental literature of the subject, but has also secured the assistance of the best petrologists in this country. The application of the microscope in this special branch of geology has of late years afforded more precise information concerning the mineral constitution and minute structure of rocks than it was possible to acquire by the older methods of research, and Mr. Rutley has given a clear explanation of the method of preparing sections of rock for microscopic examination, as well as a description of the microscopic characters of the most important rock-forming minerals, upon the identification of which the determination of the precise character of a rock is necessarily based.

Referring to the methods of research Mr. Rutley remarks that the means at the disposal of the older petrologists for identifying the mineral components of fine-grained or minutely crystalline rocks were so primitive that we wonder not so much at the little which was known about them as at the quantity of information amassed by such simple methods, and at the truth or comparative accuracy of many of their statements bearing directly upon this subject. The pocket lens was one of the most important implements in this work, and was indeed the only means they possessed for distinguishing minute structure, for although compound microscopes were known and used for physiological purposes still the idea of slicing and grinding down fragments of rock into thin sections had not at that time occurred to anyone, or at all events had never been carried into practice. Mr. Sorby about 1867 appears to have been the first to apply this kind of examination to purely mineralogical and petrological questions, but the method of grinding such thin sections for microscopic work was first practised by Mr. H. Witham in 1831 when conducting researches on the minute internal structure of fossil plants. A general knowledge of petrology, he says, will always be found useful by those who may have to deal with architecture or with mining enterprises, and it is to be hoped that some day as science progresses a definite connection may be found to exist between metalliferous lodes and the mineral composition of the rocks in which such lodes occur. He cautions the student not to regard petrology from a narrow point of view, not to confine his attention solely to observations in the field, nor to devote himself exclusively to microscopic or chemical research. The disadvantage under which the specialist labours is that he frequently takes infinite trouble to unravel a question in his own special way, when by adopting some other method he might arrive at his result in far less time, and often with greater certainty. At times a pen-knife will be found more useful than a blow-pipe, and a blow-pipe than a microscope; at other times a microscope will tell more than a complete chemical analysis.

After defining rocks, and considering their origin; explaining the disturbances of the earth's crust, structural planes, sedimentary rocks, and stratigraphy; showing how eruptive and metamorphic rocks differ from sedimentary; and describing the method of collecting and arranging rock specimens, Mr. Rutley goes on to treat of the preliminary examination of rocks, of the microscope and its accessories, of the method of preparing minerals and rocks for microscopic examination, and of examining the optical characters of thin sections of minerals under the microscope, and of the megascopic and microscopic characters of the principal rock-forming minerals. The second portion of the volume is devoted to descriptive petrology. The classification adopted has been framed for the purpose of bringing certain important typical rocks prominently before the student's notice, these type-rocks constituting as it were the nuclei of their respective groups. The eruptive rocks are classified as vitreous (sub-divided into obsidian, pumice, perlite, pitchstone, and trachyte), and crystalline, which are placed in typical groups as granite, felsite, gneiss, trachyte, including rhyolite proper, phonolite, andesite, porphyry, and diorite, diabase, gabbro, and basalt, which were included under the old term greenstone (Mr. Rutley suggests that the term greenstone should be used only in its original sense as an ambiguous and comprehensive term useful in field geology, but otherwise only admissible as an expression of comparative ignorance such as may safely be employed in the case of rocks of a certain type which have reached so advanced a stage of decomposition, and in which the constituent minerals are so poorly developed that it is no longer safe or possible to hazard any opinion concerning their precise normal mineralogical constitution) in its original and broadest signification; crystalline

rocks of exceptional mineral constitution are dealt with separately; and volcanic ejectamenta and altered eruptive rocks as the remaining classes of eruptive rocks.

The sedimentary rocks are classified as belonging to the normal series embracing the arenaceous group (sands), the argillaceous group (clays), and the calcareous group (limestones). Next comes the altered series, which is sub-classified according as they occur with no apparent crystallisation, with sporadic crystallisation, or being crystalline according as they are non-foliated or foliated and schistose. The coarse fragmental series are dealt with as breccias and conglomerates, tufas and sinters and mineral deposits constituting rock masses. The volume is amply illustrated throughout, and gives unquestionable evidence of an enormous amount of labour having been expended upon its preparation. All the more important points of the subject have been carefully noted whether they have been elucidated by the researches of English, French, German, or American petrologists, so that the book, although of convenient size and inexpensive, is of the utmost utility, and will form an excellent substitute for an extensive library to the petrological student.

CAMPION'S MAP OF SOUTH WALES.—A handsome industrial map of South Wales—3 ft. 8 in. by 2 ft. 8 in.—has just been published by Mr. Charles W. Campion, mechanical and civil engineer, of Neath. The map includes Aberavenny, Pontypool, and Newport on the east, and Carmarthen, Kitley, and Burry Holms on the west; taking in Dyrenock and Brecon stations on the north, and Aberthaw on the south; and, consequently, extending about 60 miles in one direction and 45 miles in the other, representing an area of 2500 square miles. The importance and utility of the map will be judged of from the statement that it shows all the collieries of any note in the whole of the mineral district of South Wales, as well as every tin, iron, and copper work, and every railway station, and also the docks, the interest being much enhanced by the notes concerning the general population, which Mr. Campion has inserted. The collieries and industrial works are clearly distinguished from each other by difference of form and colour of the symbols representing them, so that their position can be seen at a glance. With regard to workmanship the chromo-lithography is excellent, and as the map is mounted both on rollers for the office wall and in book form for the desk it is calculated to suit all classes of users. From Mr. Campion's experience as a surveyor in the district, coupled with the fact that he has devoted several years to the compilation and revision of the map, full reliance may be placed upon its accuracy, whilst from the facilities which it affords for ascertaining the exact locality of the several collieries, whether for estimating the character of coal produced, for ascertaining where tin, copper, &c., are manufactured, or for guidance in case of colliery accidents, it should be in possession of every gentleman either directly or indirectly connected with the South Wales coal, mineral, or metallurgical industries.

#### HIGH COURT OF JUSTICE—CHANCERY DIVISION.

IN RE THE GLOBE NEW PATENT IRON AND STEEL COMPANY (LIMITED).

This was an adjourned summons taken out by the liquidator of this company, now in liquidation, seeking to avoid, under section 43 of the Companies Act, 1862, certain debentures in the company held by the directors. The debentures had been issued under and secured by a trust deed to trustees, who were not directors or in any fiduciary relationship towards the company, and thereby, in effect, the whole property of the company was assigned to the trustees to secure the debentures that were to be issued. In consideration of moneys advanced by the directors, debentures were issued to them for the amounts. Under orders in the liquidation, the trustees of the deed had realised the property comprised therein, and this summons had been taken out asking for an order that the trustees might pay to the liquidator, to be distributed as part of the general assets, the sums held by the trustees in respect of debentures issued to directors in the company. Section 43 of the Companies Act provides for the keeping of a register of all mortgages affecting the company's property, requiring a description thereof, the amount of the mortgage, and the name of the mortgagees. It also provides "that every director, manager, or other officer of the company, who knowingly and wilfully authorises or permits the omission of such duty (that is, registration) shall incur a penalty not exceeding 50*l.*" Mr. ROMER (with him Mr. Chitty, Q.C.), for the official liquidator, contended that the effect of the section, coupled with the decision of the Appeal Court thereon, was to avoid every security held by a director, unless the same were registered pursuant to the Act.

Mr. DAVEY, Q.C., and Mr. Rodwell, for the directors, were not called upon.

The MASTER of the ROLLS, in the course of a long and important judgment as to the effect of the above section, said he was well aware of his own decision on the section and also of those of the Appeal Court, and that if the latter decisions had rested with him they would probably have been different. It only followed that he did not concur with them in opinion. That, however, would have made no difference to him as a Judge of First Instance, and he should (as he considered it his duty) have followed them had he been able to find any general principle of equity underlying them, or in case they had been exactly in point as to their particular facts. As to the case before him he considered that the real mortgage was contained in the trust deed, and that the debentures themselves did not create a charge on the company's assets. What he had to decide was not that the whole mortgage was void, but that the particular directors who had *bona fide* advanced their money were to lose their security. There was, no doubt, a duty cast on the directors by the Act to register all mortgages, but he took it to be quite plain that the Act did not in so many words avoid any mortgages not so registered. It had been said in the cases that there was some equitable principle by which these mortgages ought to be avoided. He could quite understand the equitable principle that if a man, having a mortgage on another's property, stood by and allowed a third person to lend his money on the faith that no mortgage existed, that the first mortgagee should not be allowed to enforce his mortgage on the ground of his fraudulent concealment. But this was not so in the case of joint-stock companies, as in many cases no register of mortgages existed, and a person lent his money knowing perfectly well that there might be many mortgages to third persons, and which whether registered or not would be perfectly good. As to the statute, according to his view of the section, it only extended to any actual director or manager or other officer, who would really have the power or be in the position to register; the word "permit," to his mind, showed this. To extend the statute so as to avoid the mortgages and so impose a penalty not mentioned in the Act was, in his opinion, to superadd an equity or add to the statute in a manner not justified by our law. As to the actual decisions in the section, after going very minutely through them, his Lordship came to the conclusion that he could find no principle laid down in them which, he, as a Judge of First Instance, was bound to follow, and as to the case before him he considered it not covered as to its actual facts by any of the authorities. The result of the cases and the statute was that he did not think the debentures required registration, and that the directors were not guilty of any offence in not having registered them. The summons must, therefore, be refused, with costs.

ENGLISH AND AUSTRALIAN COPPER COMPANY (Limited).—The profit and loss account for the year ending June 30, 1878, shows a balance at the credit of 3625*l.* 18*s.* 9*d.*, out of which the directors propose to declare a dividend of 1*s.* per share, payable on March 1, free of income tax.

IMPORTANT NOTICE.—REDUCTION OF POSTAGE ON THE "MINING JOURNAL."—In consequence of the new POSTAL CONVENTION, which came into operation on July 1, the postage of the Mining Journal to many countries will be reduced to one-fourth. Henceforth the subscription will be 1*l.* 10*s.* 4*d.* per annum (39*frs.*), postage included, for the following countries. The amount will, if desired, be collected at the subscriber's residence at the end of each year. The subscription continues until countermanded.—Austria, France, Belgium, Denmark (including Iceland and the Faroe Islands), Egypt, Germany, Gibraltar, Greece, Heligoland, Italy, Luxembourg, Netherlands, Norway, Portugal (including Madeira and the Azores), Roumania, Russia, Servia, Sweden, Switzerland, United States, Malta, Turkey, Morocco, Tunis, and the Canary Islands. Spain 1*l.* 19*s.* (40*frs.*)

\* "Text Books of Science. The Study of Rocks; an Elementary Text Book of Petrology." By FRANK RUTLEY, F.G.S., F.R.M.S. Geological Survey. London: Longmans, Green, and Co.

## Registration of New Companies.

The following joint-stock companies have been duly registered:—

**PURE DRIED YEAST COMPANY (Limited).**—Capital 10,000*l.*, in shares of 10*l.* To carry on the business of manufacturers of yeast, dried or otherwise, and of traders and exporters, either wholesale or retail. The subscribers (who take one share each) are—A. J. Rogers, Lower East Smithfield; W. F. Nuthall, Shepherd's Bush; G. C. Silk, 5, Abchurch-lane; H. Jordan, Dalston; W. R. Johnson, South Norwood; H. W. Mytton, Walbrook; H. Clifford, Hammer-smith.

**BRISTOL AND WEST OF ENGLAND RACE-COURSE COMPANY (Limited).**—Capital 6000*l.*, in shares of 100*l.* The purchasing of the lease, property, and effects of the Bristol and Western Counties Race-course Company (Limited), situate at Knowle, Bedminster; the establishment and maintenance there or elsewhere in England race-courses, with stands, booths, &c. The subscribers are—S. H. Hyde, Sunbury; H. S. Cobden, Clifton; R. Todd, Bristol; J. D. Dunlop, London; Lord Fitzhardinge, Berkeley Castle; D. Bailey, Oriental Club; W. Mather, Manchester, 5.

**BRISTOL AND WEST OF ENGLAND BANK (Limited).**—Capital 1,000,000*l.*, in shares of 20*l.* The carrying on at Bristol and elsewhere in England and Wales banking in all its branches, and of all other business of which a joint-stock banking company may carry on in connection with banking business. The subscribers are—W. A. T. Powell, Clifton; C. J. Thomas, Bristol; W. Wren, Clifton; J. W. Dod, Clifton; J. Time, Begbrook Frenchay; 100; W. H. Taylor, Bristol; H. Adams, Bristol, 50.

**BOARD OF AID TO LAND OWNERSHIP (Limited).**—Capital 150,000*l.*, in shares of 250*l.* To promote industrial colonisation by the purchase or acquisition of lands in the United States of America, with all mines, minerals, or rights thereto. The improvement of such lands by the construction, working, and maintenance of railroads, &c. The subscribers (who take one share each) are—Thomas Hughes, 80, Park-street, barrister; J. Boyle, 63, Chancery-lane, barrister; W. Burchell, junior, 5, Broad Sanctuary, solicitor; F. W. Smith, Boston, U.S., gentleman; W. N. Senior, 98, Cheyne Walk, barrister; J. M. Holmes, Birmingham, gentleman; H. E. V. Bellamy, 14, Buckingham-street, gentleman.

**WILTS AND GLOUCESTER ADVANCE AND DISCOUNT COMPANY (Limited).**—Capital 70,000*l.*, in shares of 1*l.* To carry on the business of a loan, discount, and deposit company in all its branches, including the business of bankers and financial agents. The subscribers are—T. Hinton, Swindon, 1000; W. Dawson, Swindon, 500; T. Pope, New Swindon, 500; W. H. Ludgate, New Swindon, 500; T. Sumer, Swindon, 500; R. Jackson, Stroud, 500; C. Barker, Swindon, 500; S. Smith, Swindon, 500; T. Chapman, Swindon, 200; B. Marsh, Swindon, 100; W. Durnford, Swindon, 500.

**PATENT LIQUID METALLIC CAPSULING, PAINT, GILDING, AND SILVERING COMPANY (Limited).**—Capital 50,000*l.*, in shares of 5*l.* To acquire, use, and vend certain inventions for capsuling bottles and jars, and for improvements in the treatment of paper, thread, tissues, wood, metals, glass, cane, leather, and other surfaces, by ornamenting them in various colours, metallic or otherwise. The subscribers (who take one share each) are—W. C. Chalmers, 114, Palmerston Buildings; J. Chalmers, 14, Great St. Western-terrace; J. A. Hilliard, 27, Ladbroke-square; G. S. Parker, 25, Gibson square; B. Hopkins, 4, Westbourne Park-road; G. H. E. Brown, Harlesdon; S. Norman, Uxbridge.

**PENCOD TERRA-COTTA BRICK AND TILE COMPANY (Limited).**—Capital 10,000*l.*, in shares of 10*l.* To carry into effect an agreement assigning to the said company a lease of the Red Path Farm for 60 years, and for the purchase of all erections on the said premises, fittings, fixtures, machinery, plant, &c., situate in Glamorganshire. To carry on the business of terra-cotta brick and tile manufacturers in all its branches. The subscribers (who take one share each) are—J. Williams, Pencod; J. Samuel, Cardiff; J. Barrow, Maesteg; W. Havell, Pencod; W. R. Randal, Bridgend; G. W. Boncher, Maesteg; W. Smith, Bridgend.

**BIRMINGHAM HOUSEBUILDING, LAND, AND INVESTMENT COMPANY (Limited).**—Capital 50,000*l.*, in shares of 20*l.* To purchase or otherwise acquire land for building purposes, and to erect thereon dwelling-houses, shops, or other buildings. To sell, lease, or let any of the company's buildings. The subscribers are—T. C. Sharp, Birmingham, 25; J. H. Sharp, Birmingham, 25; R. Norris, Aston, 25; J. Fowler, London, 25; W. W. Vaughan, Smethwick, 12; A. Wright, Birmingham, 3.

**R. B. FASTNEDGE (Limited).**—Capital 50,000*l.*, in shares of 5*l.* To purchase the business of R. B. Fastnedge, 2, East India-avenue, commission agent between England and India and otherwise, and the good will thereof; to carry on the general business of merchants, commission merchants or agents. The subscribers (who take one share each) are—S. Gompertz, New Thornton Heath; W. M. Stewart, West Brompton; W. R. Menett, 35, Pudding-lane; W. H. Perkins, Manchester; G. H. Cadot, 3, East India-avenue; F. Rockcliffe, Kilburn; J. Trail, 33, Fitzroy-road.

**LIBERIA LAND AND INVESTMENT COMPANY (Limited).**—Capital 50,000*l.*, in shares of 50*l.* To purchase or otherwise acquire lands, erect warehouses, factories, wharves, dwelling-houses, &c., in Liberia or elsewhere in Africa as may be necessary for the purposes of the company. The subscribers (who take one share each) are—J. R. B. Chinery, Monrovia; F. J. Oswin, 10, Gower-street; H. J. Furnings, 87, Liverpool-street; W. Rolfe, 10, Great St. Helens; A. W. Wyatt, 26, Stanley-road; L. A. Chinery, Natal; H. F. Harris, Clapton.

**THOMAS WALMSLEY (Limited).**—Capital 5000*l.*, in shares of 5*l.* To purchase and acquire the land, warehouse, manufactory, stables, buildings, and premises situate in Mere-lane, Rochdale, belonging to T. Walmsley, as a manufactory of soda and aerated waters, also the carriages, drays, &c., and to carry on the business or otherwise. The subscribers (who take ten shares each) are—P. Whitehead, Rochdale; D. Barker, Rochdale; F. Greenwood, Rochdale; T. Heelstead, Rochdale; Isaac Law, Rochdale; H. Crowther, Rochdale; E. Ainsworth, Bury, Lancashire.

**BIRD'S PATENT BOTTLE STOPPER AND AERATED WATERS COMPANY (Limited).**—Capital 20,000*l.*, in shares of 2*l.* To carry out an agreement for purchasing and working certain letters patent, and to carry on the business of soda water, cider, malt, bottles, bottle stoppers manufacturers. The subscribers (who take one share each) are—N. D. Garrett, Portsmouth; F. J. Moore, 98, Cannon-street; E. Le Messurier, Portsmouth; T. Terry, Southsea; C. Stewart, Alton; A. J. Piejus, 52, Queen Victoria-street; W. H. Jackson, Clapham.

**TOTTENHAM ASSEMBLY ROOMS COMPANY (Limited).**—Capital 5000*l.*, in shares of 5*l.* To acquire land in Tottenham, and erect thereon and furnish any buildings for the use of a club or society. The subscribers (who take one share each) are—W. O. Tibbets, Tottenham; G. S. Symmons, Tottenham; W. H. Plaister, Tottenham; J. Tanner, Tottenham; W. Y. Byers, Tottenham; T. W. Philps, Tottenham; G. Rawlinson, Tottenham.

**THE CALF HEY MANUFACTURING COMPANY (Limited).**—Capital 5000*l.*, in shares of 5*l.* The acquisition by purchase or otherwise of any mines of coal, iron, leadstone, or other minerals, and the working of the same. Also power to purchase any mills, sheds, reservoirs, &c., and to erect any mills, warehouses, &c. The buying and manufacturing for sale raw cotton, wool, silk yarns, or other substances, and to import or export any goods or produce in ships of the company. The subscribers (who take one share each) are—J. Maxwell, Haslingdon, cotton manufacturer; J. Omerod, Haslingdon, cotton manufacturer; J. Furnevall, Haslingdon, ironfounder; J. Duckworth, Haslingdon, gentleman; A. Warburton, Haslingdon, manufacturer; T. L. Omerod, Green Mount, Bury, cotton manufacturer; W. H. Shaw, Haslingdon, land agent.

**CHEMNITZ TRAMWAYS COMPANY (Limited).**—Capital 60,000*l.*, in shares of 10*l.* To construct, lay down, and work tramways in Chemnitz, Saxony, and its vicinity. The subscribers (who take one share each) are—E. Etlinger, London; F. J. Heestline, 1, East India Avenue; C. Philips, 115, Cannon-street; W. Gordon, 12, Montague-street; T. Jarvis, 3, King-street; F. C. Philips, 20, Basinghall-street; J. A. Bone, 19, St. Swithin's-lane.

## VALUABLE LEAD MINES IN CARDIGANSHIRE.

IMPORTANT TO MINING COMPANIES AND CAPITALISTS.

**MESSRS. TOPLIS AND HARDING WILL SELL, BY AUCTION,** at the Mart, Tokenhouse-yard, on Thursday, 20th February next, at Two o'clock punctually, the VALUABLE MINING PROPERTY known as the

## POWELL SILVER-LEAD MINES.

Situate in the county of CARDIGAN, eleven miles from Aberystwith, affording rich lodes of fine ore, yielding a considerable and steady output, and capable of extensive development.

The mines are held under leases having an unexpired term of about 14 years at reasonable royalties.

There are powerful WATER WHEELS and ample MACHINERY for pumping, drawing, and crushing, with dressing plant and all needful buildings, including a convenient manager's house, with office, smiths' and carpenters' shops, and shed for workpeople, forming a complete going concern, all in good working order.

Full information, with permission to view, may be obtained on application to Capt. BRAY, Pontnewydd, near Aberystwith; and particulars may be had of J. W. LONGBOTTOM, Esq., Solicitor, Halifax; and of the Auctioneers, 16, St. Paul's Churchyard, E.C.

## PRELIMINARY NOTICE OF SALE.

**BOWERS' ALLERTON COLLIERIES (LIMITED).**

YORKSHIRE.

In the High Court of Justice—Chancery Division.

**MR. JOHN HEPPER** (of the Firm of HEPPER AND SONS, Auctioneers, Leeds) WILL SELL, BY AUCTION, by Order of His Lordship the Master of the Rolls, SHORTLY, the

## VALUABLE LEASEHOLD COLLIERIES.

FIXED PLANT, BUILDINGS, LOCOMOTIVES, ROLLING STOCK, SEA AND CANAL BOATS, TOOLS, MATERIALS, AND EFFECTS belonging to the above company, and situate at Great and Little Preston Astley and Swillington, about seven miles from Leeds, two and a half miles from the Woodlesford Station, two miles from the Metley Station on the Midland Railway, and close to the North-Eastern Company's Railway from Leeds to Castleford and Pontefract, to which there are sidings, and by which there is communication with the Great Northern System.

Index plans and particulars and conditions of sale are in course of preparation, and may be had fourteen days prior to the sale (of which further notice will be given) of Messrs. PATTON, Wigg, and Co., Solicitors, 11, Queen Victoria-street, London; of Messrs. DIBB and Co., Solicitors, Leeds; of Messrs. DOMVILLE and Co., Solicitors, 6, New-square, Lincoln's Inn, London; of Messrs. LAMBERT, PITCH, and SHAKESPEARE, Solicitors, 8, John street, Bedford-row, London; of GEORGE ARMSTRONG, Esq., Solicitor, Newcastle-on-Tyne; of Messrs. SHUM, CROSSMAN, and Co., 3, King's-road, Bedford-row, London; and of Messrs. HEPPER and SONS, Auctioneers, Leeds.

## GRANITE QUARRIES FOR SALE.

THERE WILL BE EXPOSED FOR SALE, BY PUBLIC ROUP, within the Faculty Hall, Saint George's-place, Glasgow, on Wednesday, February 5, 1879, at One o'clock afternoon, the LESSEES' RIGHT, TITLE, and INTEREST in the QUARRIES known as the

## BAGBIE GRANITE QUARRIES.

Situated about three miles from Creetown, Kirkcudbrightshire, and lying close to the sea shore on the road from Creetown to Gatehouse, with the HOUSES, WORKSHOPS, TRAMWAYS, WHARF, and whole other fixtures on and connected therewith, under two leases granted by Major Frederick Ramsford Hankey, of Kirkdale, both terminating at Martindale, 1897.

The fixed rents payable under the leases amount to £65, and the royalties exigible in the option of the landlord are very moderate.

The tramways lead down from the quarries to the wharf, and are worked by means of pulleys and an endless chain, thus rendering the shipment of the granite easy and inexpensive.

There is also railway communication at Creetown on the Dumfries and Stranraer Railway.

The granite is of the finest quality, and the whole of the works are in excellent order.

The movable plant, which is complete and in great part almost new, will be given at a valuation; and there is a large quantity of granite paving stones lying ready for shipment, which the purchaser of the quarry will be allowed an opportunity of purchasing.

For inventories of the plant and all other particulars, apply to A. W. CHALMERS, Esq., 5, Fenwick-street, Liverpool; Messrs. TOULMIN, CARRUTHERS, and LAWRENCE, Solicitors, Lord street, Liverpool; Messrs. HORE, MONKHOUSE, and HORE, Solicitors, 16, Lord-street Liverpool; or to J. M. TAYLOR and FOULIS, Solicitors, 180, St. Vincent street, Glasgow, in whose hands are the leases and articles of roup.

## IN LIQUIDATION.

**THE KIRK MICHAEL LEAD AND COPPER MINING COMPANY (LIMITED).**

TO BE SOLD, BY PUBLIC AUCTION, without reserve, by Mr. THOMAS CALLOW, at the Peveril Hotel, Douglas, on Wednesday, the 5th day of February, 1879, at the hour of Twelve o'clock noon, subject to conditions to be then produced, the

## LEASE AND PLANT OF THE KIRK MICHAEL LEAD AND COPPER MINING COMPANY (LIMITED).

This valuable mining ground embraces an area of about 500 acres of Crown lands, held at a nominal rent, subject to a royalty of 1-12th on all minerals produced. Five separate lodes are known to exist in this area, two of which are dowle veins, unexplored, although one of them has been cut, and nice samples of ore got from it. Three adits have been driven, each over 35 fms., and lead ore out of them to the value of £2875 has been realised. There is a good supply of water for washing purposes on the ground.

THE PLANT consists of a substantial WATER WHEEL, 22 feet diameter by 3 feet wide; a powerful CRUSHER; FOUR WASHING TUBS, with STANGS; WAGONS; WATER BARRELS; BLACKSMITHS' BELLOWS; ANVIL; RAILS; PICKS, HAMMERS, JUMPERS, and other tools.

A good office, a blacksmiths' shop, and a powder house have been erected on the ground.

For further information, apply to Mr. HOPPER, Registered Office, Kirk Michael, Isle of Man.

G. H. TELLEY, } Liquidators.  
S. HOPPER, }  
R. HINDS TEARE, }

## IN LIQUIDATION.

**NEW WILDBERG MINES, RHEINISH PRUSSIA.**

TO BE SOLD (as a going concern), BY PUBLIC AUCTION, at the Mart, Tokenhouse-yard, Lothbury, on Wednesday, the 26th day of February, 1879, by Mr. HERBERT H. FULLER, of No. 1, Queen Victoria-street, E.C., the MINING PROPERTY known as

## THE WILDBERG SILVER, LEAD, AND COPPER MINES.

Situate in RHEINISH PRUSSIA, about forty miles north-east of Cologne, and twelve miles from Waldbroel Railway Station.

It consists of MINING CONCESSIONS in perpetuity, having an area of 1,684,657 square metres. Concessions of water for power purposes. Freehold and other lands about 140 acres, with PUMPING, WINDING, DRESSING MACHINERY, and MINE PLANT. Numerous buildings and extensive smelting-works.

Full particulars may be had on application to the Liquidator, UPFIELD GREEN, Esq., at the offices of the company, No. 2, Coleman-street Buildings, Moorgate-street, E.C.; or to the Auctioneer, 1, Queen Victoria-street, London, E.C.

## FORCE CRAGG LEAD AND BARYTES MINE

AND WORKS,

FOR SALE,

Situate at BRAITHWAITE, KESWICK, CUMBERLAND.

TO BE SOLD (as a going concern), BY PRIVATE TREATY, the above VALUABLE MINE AND WORKS. The site is a very large one, and contains veins of COBALT, MANGANESE, LEAD ORE, and BARYTES. A tramway runs through the site, and there are two mills driven by water power (one recently erected and fitted up with powerful machinery), for grinding barytes; plant for bleaching barytes; set of stamps and water-wheel for crushing lead ore. The royalty is very low, and the dead rent, only £25 yearly, merging into royalty.

T. RICHARDS, Esq., F.G.S., Bond-street, Redruth, inspected the property on Oct. 4th, 1875, and his report, with any further information required, can be had by applying to J. STRAUGHTON, Main-street, Cockermouth, Cumberland.

TO BE SOLD (CHEAPLY) THREE OF GREEN'S PATENT JIGGERS, equal to new, with DRIVING SHAFTS AND PULLEYS, all complete; also a large quantity of other MINING MACHINERY. Apply to Mr. G. WILLIAMS, Merchant, 6 and 7, Baker-street, Aberystwith, South Wales.

**COPPER MINE TO BE LET OR SOLD IN SPAIN.** Excellent opportunity. Superior Metal. Crossed by railway from San tander. Address, "E." Ruiz de Quevedo, Recoletos, 6, Madrid.

**FOR SALE, a NEW 70 inch cylinder CORNISH BEAM PUMPING ENGINE, 10 ft. stroke in cylinder and 9 ft. in the shaft, with steam case, metallic piston, and wrought gudgeon. The false cover, perpendicular pipes, weigh posts, working and nozzle gear all fitted bright. A strong substantial well made engine, complete, including cast iron casings for top and bottom nozzles with bright covers, holding down bolts and wrought iron caps and bolts for connection to main rod.** Apply to WILLIAMS'S FERRAN FOUNDRY COMPANY, Ferranaworthall, Cornwall. Dated Jan. 29, 1879.

**ENGINE (8-H.P.) with VERTICAL BOILER and CENTRIFUGAL PUMP attached. Another ENGINE (8-H.P.), with BOILER only. A quantity of WROUGHT and CAST IRON FLANGED PIPES, nearly new; also, SUPERIOR IRON SCREW STEAMER, 72 by 13 by 7½ feet, and a SCREW LAUNCH, ALL CHEAP.** Address, "Steamer," at C. H. May and Co., General Advertising Offices, 78, Gracechurch-street, London, E.C.

**NICKEL AND COBALT REFINING, AND GERMAN SILVER WORKS, 16, OZZELL STREET NORTH, BIRMINGHAM.** STEPHEN BARKER begs to inform the Trade that he has the following articles for sale:—REFINED METALLIC NICKEL. REFINED METALLIC BISMUTH. OXIDE OF COBALT. GERMAN SILVER—in INGOTS, SHEET, WIRE, &c. NICKEL AND COBALT ORES PURCHASED.

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## HORIZONTAL ENGINE.

**A STRONG, WELL-FINISHED ENGINE** 12½ inch cylinder, 2 feet stroke, with fly wheel, wrought crank shaft, 5 inch diameter, governor, and massive box bed.

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**18 H.P. PORTABLE STEAM ENGINE,** with link motion reversing gear, ready for delivery; also gear to wind and pump. A 9 h.p. VERTICAL STEAM ENGINE, with link motion, reversing gear (winding drum if required). A 4-ft. PAN MORTAR MILL, VERTICAL ENGINE, and BOILER, with carriage and travelling wheels.

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## INVESTMENTS IN CANADIAN PROPERTIES.

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Has 24 years' experience in Mining and Smelting, and 10 years' experience in American Business and Law, offers his services at moderate charges for Reporting on Mining and other Property in any of the above-named States or Territories; gives correct, safe, and responsible advice as to securing full titles and possession; and, as to best mode of utilising the property, will assist in settling existing difficulties by compromise, and in disposing of developed mining property when held at real value; offers his assistance for securing undeveloped mining properties at home prices. As to correctness in reporting, reference is made to the Mining Journal Supplement, April 1, 1876, containing report on property of the Maxwell Land Grant and Railway Company; as to technical standing, to the prominent men of the trade—compare Mining Journal of Aug. 30 and Nov. 31, 1872, and New York Engineer and Mining Journal, Feb. 28, 1874.

## £2000 SECURE ONE QUARTER INTEREST IN A PAYING COPPER MINING AND SMELTING BUSINESS.

The UNDERSIGNED has succeeded in securing the right of working, and an interest in, a COPPER MINE, which by actual development and test has proved capable of an almost unlimited production of ore, containing in the great average more than 10 per cent. copper. He has ready on the ground 1000 tons of ore, a good steam engine and boiler, a good blower, 7000 bushel of charcoal, and all the material requisite for the construction of furnaces, and a good house to live in. Has a coal mine of his own at eight miles distance, and the right for timber on a large tract of land, and can turn out copper in less than a month, at a cost of \$150 per ton, including freight to New York. But he desires, for two good reasons, a PARTNER:—

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2.—He needs the £2000 in part to pay therewith a balance on his interest, so as to begin clear of debt, and in part as working capital to stock the sale store with.

Mr. R. MIDDLETON, of this Journal, will on personal application give some more particulars, and is also authorised to select among applicants.

No technical education is required, but a gentleman of commercial ability would be preferred. No time should be lost in making application, as the selection will be telegraphed within a few days.

F. M. F. CAZIN, Mining and Civil Engineer.

Copperfield, near Bernalillo, New Mexico, U.S.A.

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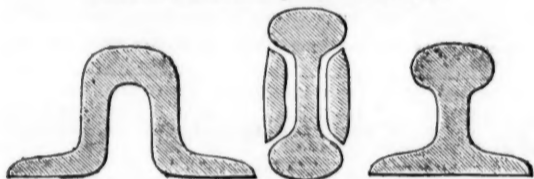
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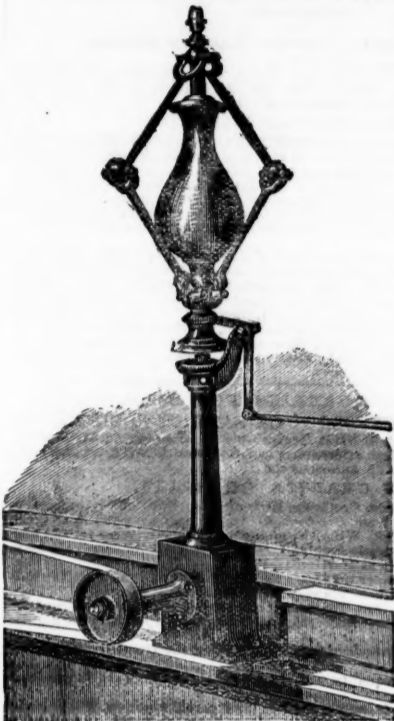
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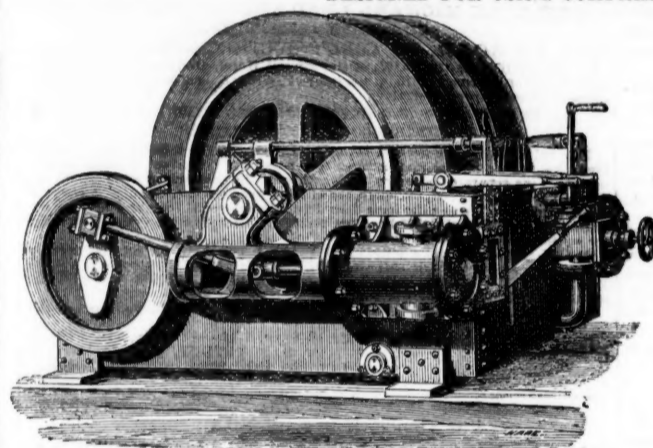
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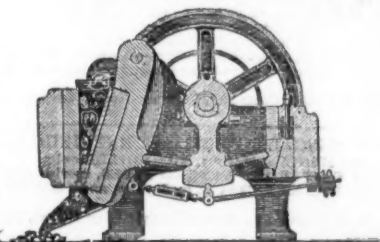
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2000	Bryn Alyn, s, Denbigh	10 00	—	—	0 7 0	0 0 0	Jan. 1877
10000	Caron, i, Cardigan	2 00	—	—	0 4 0	0 0 0	2 0 Oct. 1878
1000	Carn Brea, s, i, Illogan	58 7 6	30	27 29	308 0 0	1 0 0	Feb. 1878
400	Cashwell, i, Cumberland	2 10 0	—	—	1 9 6	0 0 0	2 0 Aug. 1878
2450	Cook's Kitchen, i, Illogan	28 4 9	1 1/2	1 1/2	11 17 0	0 0 0	7 6 Jan. 1873
240	Devon St. Convals, s, Tavistock	1 0 0	—	—	114 15 0	0 0 0	5 0 July 1877
4295	Dolcoath, s, i, Camborne	10 14 10	24	22 24	113 1 3	0 0 0	5 0 Nov. 1878
4000	East Black Oraig, i, Illogan	8 0 0	—	—	0 10 0	0 0 0	10 0 Feb. 1877
300	East Darron, i, Cardiganshire	32 0 0	—	—	335 10 0	1 0 0	Aug. 1876
6400	East Pool, i, Illogan	0 9 8	8 1/2	8 1/2	15 16 3	0 0 0	3 0 Jan. 1878
40000	Glasgow Carr, s, i, 10,000 (10,000 p.)	1 0 0	—	—	0 13 0	0 0 0	6 0 Aug. 1878
7500	Gorsedd and Merlyn Cons., i, Flint	2 10 0	—	—	0 6 0	0 0 0	5 0 Aug. 1877
15000	Grat Laxey, i, Isle of Man	4 0 0	17	16 17	24 10 0	0 0 0	5 0 Jan. 1879
418	Gr. Retalack, i, i, Penryn	5 18 6	—	—	0 1 0	0 0 0	5 0 May 1878
6400	Green Lurth, i, Durham	0 0 0	—	—	2 3 0	0 0 0	3 0 Mar. 1878
20000	Grosvonts, i, Cardigan	0 0 0	—	—	0 14 0	0 0 0	10 0 Aug. 1878
9830	Gunnislake (Ollivers), s, i	5 5 0	1 1/2	1 1/2	0 13 0	0 0 0	1 0 Oct. 1878
80000	Holmbush, s, i, Callington	1 0 0	—	—	0 4 0	0 0 0	6 0 Sept. 1878
2300	Isle of Man, i, Isle of Man	25 0 0	—	—	82 5 0	0 0 0	10 0 Feb. 1878
20000	Leadhill, i, Lancashire	3 0 0	—	—	0 15 0	0 0 0	3 0 Mar. 1878
480	Lisburne, i, Cardiganshire	15 10 0	35	30 35	587 10 0	1 0 0	Aug. 1878
14000	Llanidloes, i, Montgomery	8 0 0	—	—	0 9 0	0 0 0	4 0 Aug. 1878
9000	Marke Valley, s, Linkinhorne	5 3 6	5 1/2	5 1/2	7 16 0	0 0 0	2 0 Jan. 1878
10000	Mellandale Copper, Hayle	2 0 0	—	—	0 8 0	0 0 0	3 0 Feb. 1879
2000	Miners Mining Co., i, Wrexham	5 0 0	10	9 1/2	67 17 8	0 0 0	2 0 Nov. 1878
20000	Mining Co. of Ireland, s, i	7 0 0	—	—	23 17 6	0 0 0	2 0 Jan. 1878
1024	North Busy, s, Chacewater	1 14	—	—	1 0 0	0 0 0	5 0 Oct. 1878
1024	North Hendre, i, Wales	2 1 0	—	—	2 12 6	0 0 0	5 0 Dec. 1878
30000	Panty Mwyn, i, Mold (8754 iss.)	0 0 0	—	—	0 3 0	0 0 0	2 0 Aug. 1878
5000	Pedra-dren, s, i, Redruth	0 0 0	—	—	0 9 0	0 0 0	9 0 June 1877
5000	Pennalls, s, St. Agnes	3 5 0	—	—	3 13 6	0 0 0	2 0 July 1878
6000	Pennant, i, bar, North Wales	5 0 0	—	—	0 10 0	0 0 0	8 0 Mar. 1878
45793	Postruthal, s, i, Gwynedd	2 0 0	—	—	0 2 8	0 0 0	8 0 Nov. 1878
18000	Prince Patrick, s, i, Holywell	1 0 0	—	—	0 14 0	0 0 0	1 0 Jan. 1878
10000	Red Rock, i, Cardigan	2 0 0	—	—	0 4 0	0 0 0	2 0 Jan. 1878
12000	Roman Gravel, i, Salop	7 10 0	—	—	7 15 0	0 0 0	8 0 Mar. 1878
512	South Cardon, s, St. Cleer	1 5 0	—	—	744 10 0	1 0 0	Nov. 1878
6123	South Oundrow, s, i, Camborne	6 8 8	11	10 11	4 17 0	0 0 0	15 0 Jan. 1879
12000	St. Harmon, i, Montgomery	1 0 0	—	—	0 12 0	0 0 0	3 0 July 1878
10000	St. Pr. Patrick, s, i, 8000 (iss.)	1 0 0	—	—	0 7 0	0 0 0	1 0 Oct. 1878
4500	South Wh. Frances, i, Illogan	7 12 4	—	—	37 12 0	0 0 0	7 0 Jan. 1879
10000	Tankerville, i, Salop	6 0 0	—	—	4 17 0	0 0 0	5 0 Dec. 1878
5000	Tinoroff, s, i, Pool, Illogan	11 10 0	—	—	50 8 0	0 0 0	5 0 May 1877
18000	Van, i, Llanidloes	4 0 0	17 1/2	16 17	23 10 0	0 0 0	5 0 Jan. 1879
3000	W. Chilverton, i, Penryn	15 10 0	—	—	55 10 0	0 0 0	10 0 Feb. 1878
1783	West Fildes, St. Day	1 0 0	—	—	19 0 0	0 0 0	4 0 July 1878
512	West Tolgus, s, Redruth	95 10 0	36	24 36	32 0 0	0 0 0	3 0 Nov. 1878
2048	West Wh. Frances, i, Illogan	28 13 3	2 1/2	2 1/2	3 12 0	0 0 0	8 0 Oct. 1878
600	West Wh. Soton, s, Camborne	49 0 0	—	—	44 6 0	0 0 0	1 0 Oct. 1878
12000	West Wye Valley, i, Montgomery	3 0 0	—	—	0 12 0	0 0 0	15 0 Apr. 1878
1024	Wh. Eliza Consols, i, St. Austell	18 0 0	—	—	19 10 0	0 0 0	10 0 Aug. 1878
2048	Wh. Eliza Consols, i, St. Austell	5 13 10	—	—	8 5 0	0 0 0	5 0 July 1878
25000	Wh. Eliza Consols, i, St. Austell	5 4 6	1 1/2	1 1/2	11 19 0	0 0 0	2 0 Dec. 1878
80	Wh. Eliza Consols, i, St. Austell	1 0 0	—	—	0 8 0	0 0 0	4 0 Sept. 1878
80	Wh. Eliza Consols, i, St. Austell	178 15 0	—	—	522 10 0	0 0 0	4 0 Aug. 1878
6000	Wh. Eliza Consols, i, St. Austell	0 0 0	—	—	0 15 0	0 0 0	5 0 Oct. 1878
6000	Wh. Eliza Consols, i, St. Austell	0 0 0	—	—	0 4 0	0 0 0	1 0 July 1878
10000	Wye Valley, i, Montgomery	3 0 0	—	—	0 10 0	0 0 0	4 0 Oct. 1878

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35500	Alamillos, i, Spain	3 0 0	—	—	1 19 0	0 0 0	6 0 Oct. 1878
90000	Almaden and Tinto Consol., s, i	1 0 0	—	—	0 6 0	0 0 0	1 0 Jan. 1879
20000	Australian, s, South Australia	7 7 6	—	—	1 1 0	0 0 0	2 0 July 1878
10000	Battle Mountain, s, i, 6240 (part pd.)	5 0 0	—	—	0 10 0	0 0 0	10 0 Nov. 1878
10000	Birdseye Creek, s, California	4 0 0	—	—	0 14 0	0 0 0	2 0 June 1878
34433	Cedar Copper Mining, i, So. Africa	7 0 0	—	—	33 2 0	0 0 0	17 0 June 1878
20000	Casa de Oro, s, i, California	6 0 0	—	—	0 8 0	0 0 0	2 0 June 1878
15000	Casa de Oro, s, i, California	10 0 0	—	—	0 8 0	0 0 0	2 0 Aug. 1878
15000	Colorado United, s, i, Colorado	5 0 0	—	—	2 8 0	0 0 0	4 0 Nov. 1878
10000	Copago, s, i, Chile	15 16 6	—	—	0 13 0	0 0 0	4 0 Jan. 1878
100000	Don Pedro North of the Ry	0 18 0	—	—	1 11 5	0 0 0	3 0 May 1877
23500	Eberhardt & Aurora, s, Nevada	10 0 0	—	—	3 9 0	0 0 0	3 0 Mar. 1878
70000	English & Australian, s, St. Austell	2 10 0	—	—	1 8 0	0 0 0	3 0 Dec. 1878
80000	Flagstaff, s, i, Utah	10 0 0	—	—	3 15 0	0 0 0	1 0 Mar. 1877
25000	Fortuna, i, Spain	2 0 0	—	—	4 20 0	0 0 0	8 0 July 1878
50000	Frontino & Bolivia, s, New Gran.	2 0 0	—	—	7 3 0	0 0 0	3 0 Oct. 1878
10000	Gold Run, s, i, Nevada	1 0 0	—	—	0 2 0	0 0 0	1 0 Aug. 1878
100000	Hercules and Roe, s, Colo., fy. pd.	2 0 0	—	—	0 2 0	0 0 0	4 0 Oct. 1878
30000	Kapunda Mining Co. Australia	1 8 0	—	—	0 2 0	0 0 0	8 0 Jan. 1878
20000	Last Chance, s, i, Utah	5 0 0	—	—	0 14 0	0 0 0	2 0 July 1878
15000	Linares, i, Spain	3 0 0	—	—	17 10 0	0 0 0	2 0 Oct. 1878
83000	London and California, s, i	2 0 0	—	—	1 11 0	0 0 0	1 0 July 1878
7831	Lusitania, Portugal, i, (25 sh.)	3 10 0	—	—	1 11 0	0 0 0	1 0 July 1878
5000	Mammoth Copperopolis of Utah, s, i	10 0 0	—	—	0 4 0	0 0 0	1 0 Mar. 1878
8000	Mountain King, s, i, Utah	10 0 0	—	—	0 4 0	0 0 0	8 0 Dec. 1878
10000	Pontigbau, s, i, France	20 0 0	—	—	0 4 0	0 0 0	9 0 Jan. 1878
100000	Port Phillip, s, i, Chile	1 0 0	—	—	1 12 0	0 0 0	1 0 Mar. 1878
54000	Richmond Consols, s, Nevada	5 0 0	—	—	6 11 0	0 0 0	10 0 Nov. 1878
40000	Santa Barbara, s, i, Brazil	0 10 0	—	—	0 5 0	0 0 0	1 0 Nov. 1878
120000	Scottish Australian Mining Co., s, i	1 0 0	—	—	15 per cent.	—	Nov. 1878
122500	Sierra Buttes, s, i, California	0 10 0	—	—	1 19 0	0 0 0	3 0 Nov. 1878
140825	S. P. Bismarck Eureka, s, i	2 0 0	—	—	2 10 0	0 0 0	3 0 Oct. 1878
50000	South Aurora, s, Nevada	5 0 0	—	—	0 14 0	0 0 0	3 0 Oct. 1878
2253000	St. John of the Ry (45 stock & multiples dealt in)	5 0 0	—	—	3 1/2 year 15 p. et. for Dec. 1878	—	—
30000	Tollima, s, i, So. America	5 0 0	—	—	0 11 0	0 0 0	6 0 May 1874
35000	Victoria (London), s, i, Australia	1 0 0	—	—	0 12 0	0 0 0	6 0 Jan. 1878
15000	Western Andes, s, i, New Granada	5 0 0	—	—	0 12 0	0 0 0	12 0 Jan. 1878
21000	W. Prussia (8500 pref. sh. 101. pd)	10 0 0	—	—	0 10 0	0 0 0	4 0 Jan. 1878

## NON-DIVIDEND FOREIGN MINES.

Shares.	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last.
12000	Argentine, s, i, Argentina Republic	5 0 0	—	—	—	—	—
3000	Bolivia, s, i, Bolivia	10 0 0	—	—	—	—	—
10000	Blue Tent, s, i, California	10 0 0	—	—	—	—	—
10000	Buena Ventura, s, i, Llanos de las Infantas, Spain (25 sh.)	0 0 0	—	—	—	—	—
49335	Chautauque, s, i, Nicaragua	0 0 0	—	—	—	—	—
15000	Condes of Chili, s, i	2 0 0	—	—	—	—	—
20000	English Australian, s, i, Victoria	5 0 0	—	—	—	—	—
35 000	Excelsior Hydraulic Gold Washing Co., California	1 0 0	—	—	—	—	—
100000	Exchequer, s, i, California	1 0 0	—	—	—	—	—
40000	Holcombe Valley, s, i, California	1 0 0	—	—	—	—	—
8000	Huachuco, s, i, Spain	10 0 0	—	—	—	—	—
12000	Huntall, s, i, Orebro, Sweden	10 0 0	—	—	—	—	—
12000	Hunter Consolidated, s, i, Utah	5 0 0	—	—	—	—	—
20000	Imperial Brazilian Collieries, Brazil	5 0 0	—	—	—	—	—
15000	Isabelle, s, i, California (250 shares)	5 0 0	—	—	—	—	—
10000	J. K. L., s, i, California	5 0 0	—	—	—	—	—
50000	Javali, s, i, Nicaragua	1 0 0	—	—	—	—	—
3500	La Masocha, i, Newfoundland	10 0 0	—	—	—	—	—
12000	Lanetosa, s, i, Venezuela	1 0 0	—	—	—	—	—
75000	Malabar, s, i, Colombia (6718 issued)	1 10 0	—	—	—	—	—
40000	Malpaso, s, i, Colombia (1400 pref. shares, fully paid)	1 0 0	—	—	—	—	—
12000	Muenzenberg, s, i, Germany	5 0 0	—	—	—	—	—
4588	New Bessberg, i, i, Germany	5 0 0	—	—	—	—	—
60000	New Quebrada, s, i, Venezuela	5 0 0	—	—	—	—	—
20000	New Zealand Kapanga, s, i, Oromunda	5 0 0	—	—	—	—	—
3000	Oregon, s, i, Oregon, U.S. (preference shares)	5 0 0	—	—	—	—	—
50000	Panulillo, s, i, Chile (280000 debentures)	4 0 0	—	—	—	—	—
5000	Pastorale United, s, i, Italy	4 0 0	—	—	—	—	—
25000	Pitiquil, s, i, Brazil (incl. 6000 sh. £1 fully paid)	2 0 0	—	—	—	—	—
25000	Placerville, s, i, California	0 5 0	—	—	—	—	—
5000	Providence and New Rosario, s, i, Mexico	2 0 0	—	—	—	—	—
40000	Ravenscroft, s, i, New Zealand; s, i, South Australia	1 0 0	—	—	—	—	—
5 000	Rica, s, i, Colombia (40000 issued)	0 5 0	—	—	—	—	—
2,181,000	Rio Tinto, s, i, Huelva, Spain	1 0 0	—	—	—	—	—
10000	Rosa Grande, s, i, Brazil (21 shares)	8000	—	—	—	—	—
50000	Russia Copper, Gwynburg and Ufa	10 0 0	—	—	—	—	—
10000	Silver Plume, s, i, Colorado	1 0 0	—	—	—	—	—
80000	Tecoma, s, i, Utah	10 0 0	—	—	—	—	—
43174	United Mexican, s, i, Mexico	29 0 3	—	—	—	—	—
14000	Utah, s, i, Utah	2 0 0	—	—	—	—	—
50000	Yrreberg, s, i, Rheinbreitbach, Germany	8 0 0	—	—	—	—	—
18000	Yorke Peninsula, s, i, South Australia	2 0 0	—	—	—	—	—
54500	Yorke Peninsula, s, i, South Australia Preference	1 0 0	—	—	—	—	—

\* Have made calls since last dividend was paid.

## FOREIGN AND MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS.

Shares.	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.</
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